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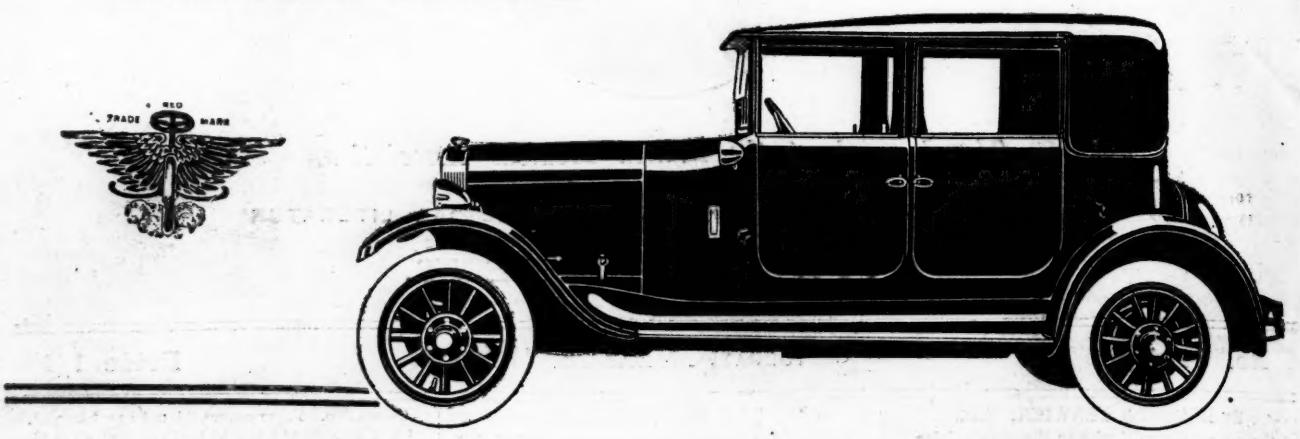

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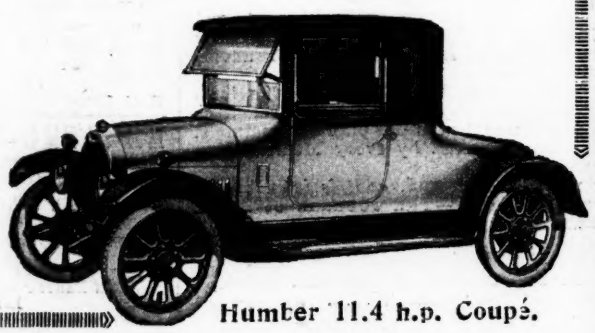

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A British Medical Association Lecture

ON

"PERNICIOUS ANAEMIA" AND "SEPTIC ANAEMIA."*

WITH NEW OBSERVATIONS ON THE DISTINCTIVE SORE TONGUE, SEASONAL INCIDENCE AND POWERS OF RECOVERY OF "PERNICIOUS ANAEMIA," NOW TERMED "GLOSSITIC ANAEMIA."

BY

WILLIAM HUNTER, C.B., M.D., F.R.C.P.,

SENIOR PHYSICIAN, THE LONDON FEVER HOSPITAL; CONSULTING PHYSICIAN, CHARING CROSS HOSPITAL.

INTRODUCTORY.

THE subject of anaemias, selected by the Council of the British Medical Association for my address to you to-day, has been one of peculiar interest to me for over thirty-five years. In coming back to it now after a break in that interest occasioned by the war, I have put to myself the question, What has been the practical outcome of it all? And I have thought that I might best help it if I endeavoured to-day to consider before you what new light, if any, this prolonged study has thrown either on the nature, the diagnosis, or the treatment of those forms of anaemias that are obscure and give trouble both in diagnosis and treatment—forms best designated as severe to distinguish them from others that are simple in their character.

In my remarks to you to-day I shall draw on my experiences, and illustrate them by the specimens and plates shown to you, without adhering to the final form which I have sketched out and now give to this address. The former is easy to me, while the latter, owing to the abundance of material at my disposal, is difficult. And yet I feel a great desire to put together in the form of one address the salient facts of that experience, in the hope that by so doing I may give you something that may help you in your outlook and practice in connexion with blood diseases generally and severe anaemias in particular.

The infective and clinical features of severe anaemias go deeper into their nature and help far more in diagnosis and treatment than the various blood criteria so much before our notice in dealing with anaemias. Such sums up in one sentence the most important outcome of my studies, and may well be taken as the text of my address to you to-day.

I am not going into the matter of these blood changes with you to-day. Indeed, in all my various studies and writings I have kept them in the background. I have had a great purpose in doing so. As detailed in the formidable list of percentages familiar to us in blood reports they make a deep impression on the eye and on the mind—that surely here, if anywhere, the full facts regarding anaemias must be found. Unfortunately this is not the case. For they have one great drawback—namely, they always fail precisely in the borderland group of cases, in which the clinical observer most needs their help. Secondly, they always fail whenever the anaemia is moderate in degree, and when it is particularly necessary to be sure of the character of the anaemia with which we have to deal if successful measures are to be taken in time to arrest its progress.

Infective Criteria.

On the other hand, the outcome of the study of the infective and clinical features presented by cases of severe anaemia has yielded me the following information, which I summarize in five paragraphs, and shall afterwards amplify in the course of my address:

1. Two forms of severe anaemia are to be recognized. The one is the great haemolytic disease, *sui generis*, termed idiopathic or pernicious anaemia. The other is a very common anaemic condition—non-haemolytic in its nature—which I have differentiated and term septic anaemia (1900). It is these two classes of severe anaemia with regard to which I propose to-day to describe the final outcome of my studies.

2. That outcome reveals that the patient who presents the picture of desperate anaemia—termed pernicious, as it was presented and as it is still presented when first seen—is really in the grip of both the above forms of anaemia, each of them capable of killing him, and the two combined absolutely mortal. The chief one that gives his illness its main characters and clinical features and course is the haemolytic disease termed pernicious anaemia; the other complicating one is the above-mentioned non-haemolytic septic anaemia.

3. The practical outcome of this recognition and differentiation which I propose to describe to you to-day is that the two anaemias can be torn apart by removing completely the septic anaemia and its causes from the pernicious anaemia patient. On doing this the great haemolytic disease which remains shows itself for the first time in its history in its true uncomplicated characters and course; and these prove to be much milder in severity and with a much better prognosis than were ever formerly presented.

4. The further outcome of these studies has been to reveal certain simple and easily recognizable clinical diagnostic features which enable the haemolytic disease "pernicious anaemia" to be recognized in its very earliest stages—even within a few weeks of its first contraction, long before the existence of this anaemia has been ever dreamt of, and on an average about two years before it generally comes under treatment.

5. The infective and clinical features here referred to, that help so much in diagnosis and treatment of both classes of anaemia, are connected with observations, not on the blood, but of lesions connected with the mouth. These lesions are combined in the case of the pernicious anaemia patient, but are perfectly distinct from one another, and have a totally different pathological and etiological significance.

The infective lesions connected with, and diagnostic of, the haemolytic disease "pernicious anaemia" are those connected with, and manifested by, the peculiar sore tongue which this disease presents as one of its earliest features. The lesions concerned with the "septic anaemia" are septic lesions connected with chronic and overlooked dental and nasal sepsis, especially the former, to which I have given the name "oral sepsis."

The foregoing being a brief summary of the general outcome of my studies, I now pass on to consider some of the chief facts in the following three sections of my address; Part I: Pernicious anaemia. Part II: Septic anaemia, as an independent anaemia, and as an intense complication of pernicious anaemia. Part III: Great powers of recovery of pernicious anaemia on removal of the sepsis and septic anaemia associated with it.

I.—PERNICIOUS ANAEMIA.

Sore Tongue as the Earliest and Chief Diagnostic Feature of Pernicious Anaemia.

The particular lesion which more than any other I find to be most distinctive of the haemolytic disease "pernicious anaemia" is the presence or history of a peculiar form of "sore tongue" in a patient suffering from an anaemia. Such a history, associated with the clinical features of increased blood destruction (haemolysis), is, in my observations of the past thirty years, since I first described it in the first case I ever studied (1890), the most important infective and diagnostic feature of this great haemolytic disease. So much is this the case that the name which would, in my judgement, most clearly connote this disease, help in its early recognition and subsequent control, and at the same time get rid of the brutal, ill-omened, prognostic, and confusing name of pernicious, would be the title "Glossitic haemolytic anaemia," or, more shortly, "Glossitic anaemia." After many years of perplexing consideration given to the matter, it is that name I now give this disease, and by which I shall henceforth refer to it. I do so in the hope that I may thereby free future observers and future sufferers from this disease from some of the difficulties which for thirty years and more I have experienced in connexion with the name "pernicious"—the worst name ever given in medicine, and a cause of confusion not associated with any other disease in medicine.

The name "glossitic" which I now give it will at least make clear the exact identity of the haemolytic disease, with which my work for thirty years has been concerned—the disease which alone I have ever had in view under the name "pernicious anaemia," or the more distinctive name of idiopathic anaemia of Addison, or the historical name I gave it in my work in 1910 of Addisonian anaemia, or the latest name given to it in an important Continental work in Holland of Addison-Hunterian anaemia.

The great haemolytic disease to which I thus give the name of glossitic anaemia is the disease referred to throughout its history by the following names:

"Anaemia in its most idiopathic form" (Combe, 1822).
"Idiopathic anaemia" (Addison, 1855).
"Progressive pernicious anaemia" (Swiss and German and other observers, 1870–88).
"Idiopathic pernicious anaemia" (Pye-Smith, 1878).
"Pernicious anaemia" (all observers).
"Idiopathic haemolytic anaemia" (Hunter, 1890).
"Addisonian anaemia" (Hunter, 1910).
"Addison-Hunterian anaemia" (two chief Dutch writers, 1921).
Idiopathic "*Glossitic anaemia*" (Hunter, 1921).

* Delivered before the Devon and West Somerset Branch at Taunton, November 15th, 1921.

In bringing to an end my long series of studies on this disease and giving it now this final name, may I note that by an interesting coincidence the disease this year celebrates the centenary of its first case recorded in any language—namely, that recorded by Combe of Edinburgh in 1822.

May I note further that the very first words he applied to the disease were: "A very peculiar disease, which will doubtless be viewed in different lights and receive different appellations. If any train of symptoms may be allowed to constitute anaemia a generic disease, the following may be considered an example of it in its most idiopathic form."

May I add, further, the final opinion of the oldest observer who had followed its story for a period of nearly sixty years—from its earliest beginnings in English medicine in the late "forties" of the past century to the final termination of my own work upon it in 1903. The observer referred to was Professor Sir William Gairdner of Glasgow (1903), who said, writing a year or two before his death:

"My earliest acquaintance with the disease dates from the late 'forties,' when I reviewed the first paper in which Addison introduced his idiopathic anaemia idea. All I have seen makes generally for your view of the case. I wish I had taken note of the glossitic phenomena you describe, but I am afraid I am among the number of those who have passed over very much within my view. If you can make that point (the glossitis) clear as being of the frequency you describe, you will have won your case against all gainsayers."

In introducing this name, may I, to save time, anticipate the criticism which I know from past experience of everything connected with the name "pernicious" will assuredly be raised. That criticism is that I have described a "new form" of pernicious anaemia, thereby only making confusion worse confounded. To anticipate this may I repeat that, apart from the disease to which I now give the name of "glossitic anaemia," I have never seen a case of "pernicious anaemia" in my life, or a case of "idiopathic anaemia of Addison," or a case of "Addisonian anaemia," or a case of "Addison-Hunterian anaemia."

What I have done is to obtain the great haemolytic disease in a pure form such as rarely, if ever, previously existed; to find that this disease when freed from sepsis has milder characters and a more benign and better course than it ever before had, and that it deserves some name that will help in its diagnosis and treatment, instead of the name "pernicious," which does neither.

May I also anticipate another kind of criticism which it may at once receive. It was one I heard recently from a student. He had evidently been taught to attach no importance to it, because, as he said, a similar sore tongue could also be found in sprue, scarlet fever, and leucoplakia! Sprue, a disease of which most people have never seen a case; leucoplakia, a condition which is of no vital importance to anyone; and scarlet fever, of which I have seen many thousands of cases, and with whose tongue conditions, it may be presumed, I am well acquainted. The sore tongue to which I attach importance is that found in combination with the twenty-one characteristic clinical features of the disease I term glossitic anaemia.

Sore Tongue Features in Ten Cases.

The sore-tongue lesions I refer to are those I described for the first time in the first case of the disease I ever studied (1890). Their histological characters are illustrated in my work on *Severest Anaemias* (1910), in plates which I now show you. Their constancy is such that I have seen them in every case—150 or more—of which I have full records. Their characters when marked are shown in the coloured plate from the last case under my observation. Their relation to the disease from its origin onwards may be illustrated by the following cases selected almost at random from my records.

CASE I. (*The Original Case, 1889.*)

Illness dated from the autumn of 1887. While on holiday in the country he was exposed for a time to unhealthy sanitary conditions—drain smells. He suffered at the time from sore tongue and sore throat, and never afterwards regained his health.

1887. He continued to suffer at times from an inflamed tongue—red spots on the tongue.

1888 (June). His tongue troubled him very much, tenderness on eating, extending down the throat into his stomach. Tongue extremely flabby, indented by the teeth, presenting a red fiery appearance, with scattered patches of a more inflamed character. Portions of the mucosa being smooth as if devoid of papillae. The redness extended to anterior pillar of fauces.

May, 1889. Tongue much the same as before, not quite so raw; along edges there are patches of more fiery redness. Some of these under tip of tongue show small inflamed vesicles full of serum. (Death took place in May, 1889.)

CASE XII (1901).

About September, 1900, very bad inflamed tongue, deep red. Swelled so that he could hardly get it out of his mouth, and had to take everything cold—anything warm gave him pain. Tongue always more or less tender for some years before—always on the same spot, the right side; with sometimes little vesicles. They came and went, but were never severe till September, 1900, when the attack lasted six weeks. Has not been troubled with it much till now (May, 1901), when it became sore all over and is still sore. It is now smooth and glazed. (Death, 1901.)

(Illustrations of this tongue in *Severest Anaemias* (1910), Plate 2, Fig. 4; Plate 5, Figs. 9 and 10. The changes were extreme in character, nearly all the muscle substance being destroyed, and the epithelial covering reduced to a mere line of cells.)

CASE XV (1901).

A gentleman, an eminent member of the profession, living retired in a large old country house with sporting estate attached. He was fond of gardening. In the autumn of 1900 he spent much time in watering his roses with sewage obtained from an old cesspool, the stench of which was very bad. His tongue became very sore, and at the same time he began to feel very weak and tired at the end of the day. He had formed a small sitting-room from a former gun-room, with which an old lavatory was connected. He used to sit, feeling very wearied, by the fire in this room, between the fire and the lavatory. He then found that there was an old cesspool under his lavatory floor, so that, unknowing, he had again exposed himself to very marked drain infection. He became very ill and anaemic during the autumn (stage of invasion). He had all the features of pernicious anaemia the following spring when I saw him, accompanied by the recurrent sore tongue. He made a remarkably good recovery three months after I saw him, and enjoyed excellent and robust health over a period of eight years, when he died.

He wrote me that he still from time to time had feelings of intense illness, which gave him concern, and a feeling that he still had his old disease on him. I saw him only once, some six years later, in robust health. His tongue was beefy red and very characteristic. He died two or three years later, but I never got any further details.

CASE XIX (1901).

Mouth becomes sore every three or four weeks with what appear to be little "canker spots" on sides; tongue swells and cracks. This lasts about a week, then goes off for a time.

January, 1902. Tongue much better, sores on sides healed, but surface shows a sodden appearance.

February. Patches on side of tongue returning.

March. Tongue better and clean. (Death. Illustrations of tongue, op. cit., Plate 2, Fig. 3.)

CASE XX (1901).

Ill health began in 1898 when she went to stay with friends and slept in an insanitary room for a month. On returning home complained of a sore tongue (incubation period of disease, three to four weeks). It was swollen and raw, so that she could not bear to touch it, a number of ulcers—eight on one side alone—extending all round edges of the tongue, inside the cheeks, and on the throat. She has had this condition off and on ever since about every two or three weeks. Tongue now soft, with angry red patches on sides and tip; at other parts shows atrophy. At two parts, small white patches, like sodden blisters, very tender. Tongue at times swells up almost to teeth.

February, 1902. Tongue very clean.

March, 1902. Three red spots on tongue at tip. On left edge two yellow vesicles about size of a barley seed. Later on improvement and no redness.

CASE XXV (1902).

For last two years "she has always had a sore tongue, so that she could not take wine without a feeling of scalding as far as the stomach." It comes and goes; no vesicles, but little cracks appear on edges and on dorsum. Tongue has now a singularly inflamed look, with cracks all over the edges; great tenderness.

CASE XXVIII (1903).

Tongue became sore about three months ago (September); soreness seems to go right through to back passage. It appears perfectly well for a time, then a relapse occurs once in two to three weeks. It has now a smooth and fissured appearance.

CASE XXXIV (1905).

Ill health began some four years ago (1901), when he had a bad attack of anaemia. Tongue has been sore off and on since 1901. Always noted at the times he is ill. Then the pain goes down to pit of stomach, causing retching and indigestion; then he gets so weak he has to go to bed.

CASE XLIV (1907).

Good health till spring of 1903, when she came in contact with a very foul drain. Tongue at this time began to be sore and red, varying in intensity and distribution; and this has continued up to present time with periods of intermission.

CASE XLVII (1907).

Since 1905 tongue has been very sore—very beefy-looking. Sometimes blood raw. Comes and goes every few weeks. Soreness extends down into stomach, with severe diarrhoea.

1908. Tongue remarkable—bright, fiery red, with cracks on sides and bright red papillae all over.

September. Run down in health and had a bad tongue. Tongue gets inflamed at tip every three weeks, accompanied by some discomfort in stomach and lower down, as if he were inflamed all the way down.

Summary.

I have found a history, similar to the preceding, in all cases I have seen.

It may be summed up as a sudden onset, with a seasonal time of onset (July to September), marked by periodic "sore tongue," periodic "sore stomach," periodic "sore bowel," followed by periodic sore haemolysis, periodic sore anaemia.

The first three features occur singly or combined, varying in intensity at different times; sometimes quiescent, at other times active. This periodicity is very marked in the tongue lesions. At times this looks quite normal; but at other times, generally at intervals of two to three weeks, it becomes tender, and shows patches of redness, or vesicles; or it may become extremely inflamed, looking like raw beef. When the patient is extremely anaemic these tongue lesions are least obvious, since the patient has not sufficient blood in his body to cause redness or inflammation; and in some cases they may be quite absent or quiescent for months at a time.

They are therefore often best seen when the patient is comparatively well or in the stage of recovery. Their recurrence from time to time during the stage of recovery is a most valuable guide in the treatment of the case, since it denotes renewed activity of the disease at different times. These recurrences are always accompanied by evidences of haemolysis—for example, lemon colour, high colour of urine, and some fall in the number of red cells—as observed over a period of fifteen years in a case under my care, which I shall later refer to.

I show you the actual changes in the tongue (and stomach and intestine) as represented in plates in my work, *Severest Anaemias* (1910). The intrahepatic changes of catarrh of the smaller bile ducts associated with the jaundice (haemolytic) occasionally presented by the disease I have also been able to study in a case which died in the acute stage.

Clinical Features and Course of the Haemolytic Disease "Glossitic Anaemia," ushered in by the above Symptoms of Recurrent Sore Tongue.

The disease thus ushered in is the anaemia termed "pernicious anaemia." Apart from the disease marked by the sore tongue above described, I have never seen a case of pernicious anaemia in my life. As regards the individuality and identity of this disease, I draw special attention to two great outstanding etiological characters distinguishing it from all other anaemias.

Individuality and Identity of this Disease.—The first is its most peculiar sex and age incidence in the 150 cases—no fewer than 71 per cent. of the cases being in men, in whom all other anaemias are least common; and 85 per cent. over the age of 40, the age at which all other anaemias are least common. This feature is a hard statistical one, which can be expressed in actual figures as above stated. The haemolytic and glossitic features which, from 1890 onwards, I have described in connexion with this disease I have now called glossitic anaemia, have lifted the identity of this anaemic disease far above the level at which it stood thirty years ago under the title of "pernicious anaemia." The sex and age incidence originally given for the anaemia called by this name (in 1871) was 20 per cent. in the male sex (as compared with my 71 per cent.); and 16 per cent. above the age of 40 (as compared with my 85 per cent.): obviously a totally different class of cases. Nevertheless, in spite of this extraordinary difference, the name I have to give the unique type of disease which forms my group of cases is the same name "pernicious" as that given to a totally different class of case. Hence my resolve now—after thirty years of difficulties connected with the above fact—to give this great haemolytic disease a name that will accurately connote its identity as I find it, and also incidentally connote the disease to which all my work on this disease refers.

The second great outstanding feature of this disease is the last one I described in connexion with it—in 1913. This is the extraordinarily marked seasonal character of its onset and of its periodic relapses—namely, July to September for its onset, and approximately the same months, July to September, for its relapses. I know nothing in connexion with any chronic disease so remarkable or so constant. It places this disease within the category of specific infective diseases in such a striking way that this character of it can be no longer in doubt. No other anaemia known to me has such a character. It is notably absent in the anaemic condition which, when severe, most closely resembles it, and is most frequently mistaken for it—the anaemia which I have differentiated and term "septic anaemia."

All my cases show the same characters and course as the original one. But many show certain other features to which I draw special attention. The first of these is the occurrence of fever as one of the first features in the onset of the disease—fever of obscure nature, generally termed "influenzal" by the patient. This feature is quite a common one. Its chief character is that it is followed by such a surprising degree of weakness and by the lemon colour which denotes the haemolysis of the disease.

Another feature shown in other cases is one of great importance—the surprising degree of anaemia which accompanies this first attack, down to 40 per cent., a fact of importance since it is very seldom that the blood is examined at this period. The same applies to the second attack, which is often also passed through without the question of a severe anaemia having been raised; and yet the blood may be as low as 23 per cent. The recovery from this attack is not so rapid or complete as after the first attack, the blood only rising to 50 or 60 per cent. as compared with 80 to 90 in the first attack.

It is generally only when the third attack occurs that the anaemia becomes so marked as to be a matter of real concern. The question of it being "pernicious" is then raised often for the first time—that is to say, two years after the original attack. It is quite astonishing, indeed, to see from one's reports how often the patient's statement begins that his "illness began about two years ago." It is this important hiatus in the observation and possible control of the disease that can now be bridged over by the diagnostic feature of the sore tongue which I have described. For the patient can often recall, even to within a month, the exact date at which he first began to be troubled with a "sore tongue," and that occurrence marks approximately the first period of onset of the disease.

Lastly, a constant feature is the existence of nervous features in slighter or severer degree in all cases of the disease—visceral pains (in tongue, stomach, or intestine), peripheral, cerebral and mental.

II.—SEPTIC ANAEMIA:

(*a*) AS AN INDEPENDENT ANAEMIA;
(*b*) AS A COMPLICATION OF PERNICIOUS ANAEMIA.

Interesting and informing as the foregoing facts may be regarding the great haemolytic disease, an even greater interest and practical importance attaches to the second outcome of my studies regarding anaemias. That outcome is the complete differentiation of another form of anaemia which I have termed septic anaemia; and the discovery of the great part it plays not only as an anaemia existing by itself, but even more as a frequent accompaniment and complication of other forms of anaemia, and indeed of other diseases.

Its discovery arose out of my studies (in 1900) regarding the presence of the common septic conditions I termed oral sepsis as an intense complication—not the causa causans (*pace* many erroneous statements)—of the great haemolytic disease pernicious anaemia marked by sore tongue, as I have described in the previous section. I find, namely, that this oral sepsis itself can and often does cause a form of anaemia quite different from the haemolytic anaemia of the sore tongue disease. The anaemia so caused is not an anaemia *sui generis* as the former is; it is an anaemic condition produced by long-standing sepsis—chiefly streptococcal—such as accompanies dental disease, or may be found from time to time in adjacent parts, especially the antrum and nasal air sinuses.

This septic anaemia is, in my experience, the commonest form of all anaemias. It varies much in degree, often mild, but at times very severe, simulating and approaching even that of the sore tongue, haemolytic anaemia—for example, down to 20 per cent. of red cells. But it differs totally in its pathology from the above-mentioned glossitic (or pernicious) anaemia in being non-haemolytic, and in owing its character to deficient blood formation, just as much as the haemolytic anaemia owes its character to excessive blood destruction. The cause of it in nine-tenths of cases is, as I have just stated, unrecognized and very common sepsis, connected with bad teeth and periodontal disease (pyorrhoea)—"oral sepsis"; in other cases it is overlooked sepsis in the antrum and nasal sinuses.

But, as I have stated, the intense clinical interest of this anaemia is that it may not only exist alone. Far more frequently it exists along with and complicates other anaemias in which similar conditions of oral sepsis are present, and herein lies part of the great importance of oral sepsis in connexion with the disease called pernicious anaemia.

"Glossitic Anaemia" plus "Septic Anaemia" in the same Patient: Importance of Oral Sepsis as a Complication.

In addition to the history or presence of sore-tongue lesions, which I regard as of utmost diagnostic importance, the mouth in glossitic anaemia patients generally presents when first seen another class of infective lesions connected not with the tongue but with the teeth. There are the septic conditions which I term "oral sepsis" (1900). I have kept them apart from the glossitic lesions because they are of a different character and significance. However bad they may be they do not in the absence of sore tongue or its history point to the diagnosis of the idiopathic haemolytic disease, glossitic anaemia. On the other hand, any history of sore tongue, however slight it may be, in an anaemic patient should raise the suspicion of this haemolytic disease, even if little or no oral sepsis is present.

In most cases, however, the conditions of oral sepsis presented when the patient first comes under notice are very bad. Thus to quote only one case:

"Many of his teeth are quite loose, both in the upper and lower jaw; they are all very septic, showing periodontitis, pyorrhoea, and calcareous tartar deposits, and much septic gingivitis, and there are in addition a number of carious teeth and septic stumps. He has neglected his teeth, and has been in the habit of himself pulling them out as they became loose."

A pretty septic story is thus presented by such cases—a story prior to 1900 invariably present in all cases throughout the history of the disease, and still presented in some degree or other by every case when it first comes under notice.

What is the importance of these septic lesions around the teeth? It is, I find, of a threefold character, to which I draw your special attention.

1. *Power of Producing Septic Anaemia.*—The one to which I am specially drawing your attention to-day is the power of chronic streptococcal sepsis *per se* in producing a definite and sometimes extreme degree of the anaemia I have termed "septic anaemia." But important as this is in connexion with the prevalence of oral sepsis and the part it is thus playing in causing all sorts of degrees of anaemia—for example, in young children, young adults, and especially in young girls who are already so liable to anaemia of non-infective nature—this power *per se* of producing anaemia by no means exhausts its special importance as a complication of the haemolytic disease, glossitic anaemia. For in this latter disease the tongue is the seat of lesions which cause cracks and fissures and abrasions of its covering epithelium, exposing it therefore in special degree to any septic infection in the mouth. And when one remembers how constantly the tongue is in movement, expanding and contracting, it must act like a sponge in absorbing the intense streptococcal sepsis present in many cases, thereby favouring the production of septic anaemia. Furthermore, the action of septic infection is to retard blood formation in the bone marrow (a pale bone marrow). It thus counteracts the action of the haemolytic infection, which is to stimulate blood formation (red bone marrow). The removal of the sepsis therefore frees the bone marrow from a markedly depressing influence, and allows the full compensatory powers of the bone marrow free play. The result is shown by the remarkable and increased powers of recovery of the haemolytic disease on removal of the sepsis.

2. *Power of Producing "Septic Gastritis" and "Septic Enteritis."*—In this latter disease oral sepsis plays another important part—the one which first drew my attention to it, and the one which I endeavoured to describe in my first account of this subject in 1900. That part is the power of oral sepsis in inducing unhealthy conditions of catarrh in the stomach and intestine ("septic gastritis" and "septic enteritis," as I termed them)—in the alimentary tract. It is these that constitute the class of "certain favourable conditions" which in my first studies in 1890 I concluded to be necessary for the contraction of the haemolytic infection (a specific one) underlying the haemolytic disease and glossitic anaemia. My studies have fully confirmed the importance of this action of oral sepsis. Prior to 1900 the most distressing features of that disease were the frequency of gastric and intestinal symptoms: the loss of appetite, the distaste for food, the nausea, recurrent sickness and vomiting, the looseness of bowels, or the recurrent and oftentimes persistent diarrhoea which marked the progress of this disease—for example, vomiting every day for two or three months. While symptoms of gastro-intestinal disturbance are still definite features of the disease, I never see nowadays this class in the severe degree I formerly witnessed in every case. All the patients recently under my care have indeed been singularly free from them, except from time to time in slight degree. I attribute this happy result to the removal of all oral sepsis—all teeth from the cases—and to the consequent removal of that factor as a potential cause of gastric and intestinal trouble, or as a potential complication and adjuvant of the action of the specific haemolytic lesions that may be, and in all cases are, present in some part or other of the gastric or intestinal mucosa.

3. *Septic Lesions around the Teeth as Seats of the Haemolytic Infection of Glossitic Anaemia.*—But a third (and in my judgement the most important) part, from a pathological point of view, played by oral sepsis in connexion with the haemolytic disease, glossitic anaemia, is the one I have now indicated. This is that the lesions around septic teeth, the open wounds connected with septic gingivitis—for example, especially under calcareous masses of tartar—the pyorrhoea, the carious roots, the presence of gold caps or bridges, *et hoc genus omne*, are lesions in which the haemolytic infection of the disease also takes root and by which its persistence in the body is favoured.' So important is this that in my observation the first seat of that infection is in all probability in most cases such open septic lesions around the teeth. It incubates itself there, thence spreads to the tongue, which afterwards becomes its special seat, and thence spreads to the mucosa of the stomach and intestine.

In short, the exact pathogeny of this disease—its mode of spread—could not be better described than in the words used by one patient regarding it:

"His illness began with sore tongue; his tongue always got inflamed every three weeks, accompanied by some discomfort in the stomach and lower down, as if he were inflamed all the way down."

Or as another equally well described it:

"Tongue became sore about three weeks ago. The soreness seems to go right through to back passage. It appears to be perfectly well for a time; then a relapse occurs every two or three weeks."

Or as another described it:

"His illness began with sore tongue, quickly followed by yellowish complexion (haemolysis) and great weakness (anaemia). He told several doctors that he thought the sore tongue had something to do with it, but they attached no importance to it."

If this be the character of the haemolytic infection—namely, located in the tongue, mucosa of stomach and intestine, and wakening into activity every two or three weeks—the importance of open septic wounds around the teeth, in the sockets of the teeth, and in the bone around the sockets, as the seats of the haemolytic infection becomes extreme. For this infection is undoubtedly present in the tongue, and must invariably be passing from the lesions of the tongue to the sockets of the teeth. Or, conversely, if preserved in the lesions around the teeth, it must constantly be passing to the tongue (stomach and intestine), grievously aggravating the amount of the haemolytic infection already present.

A *circulus vitiosus* is thus created between the tongue lesions and the oral septic lesions. Therefore this oral sepsis in this great haemolytic disease glossitic anaemia, already characterized by the great persistence of its own infection, is of altogether supreme importance. So great is the part it plays that in my judgement there is no safety from it in this disease except by the radical measure of removing every tooth—whether bad or apparently good—in order to remove all the potential haemolytic infection which may be present in the septic lesions around teeth already diseased, or that may subsequently find root in teeth which, although apparently good at the time, may later on become diseased. I have never failed to see immediate benefit follow the removal of even one or two bad teeth, and great benefit follow the removal of as many as seemed bad or doubtful. But I have never failed to regret, in every case I have seen, when watching its subsequent course—and seeing how persistent the haemolytic infection is—that I have not been allowed to remove all the teeth in the first instance, in order to get rid once and for all of the important potential complication of new seats of infection being formed around teeth as they subsequently become bad.

Frequency of Oral Sepsis in "Glossitic Anaemia."

On this point I have, since I first announced it in 1900, had no manner of doubt—such as many, including not a few teachers, seem apparently to have, judging from what I sometimes hear. Their furthest admission regarding the matter does not go beyond the very guarded and non-committal one that "I am inclined to think there may be something in it, although, of course, not as much as you believe. Why, I have seen cases of pernicious anaemia without any teeth!" (Many such cases are now being seen—since 1900, when the importance of removing septic teeth was first drawn attention to. Further, pernicious anaemia is far more common in hospitals than formerly was the case, for the reason that far more chronic cases are now alive.)

My own doubts have long been dispelled, as theirs also would have been, by the painful and tragic experience I had shortly after 1900 of seeing several scores of private patients in rapid succession in the course of a few years, all of them presenting features of sepsis in the teeth and mouth that were perfectly lamentable. The majority of them were found at death's door, literally sodden with neglected sepsis, in addition to their real severe disease, although on an average they had had their disease on them for about two

years before I saw them. So bad was it that I found it impossible to carry out the measures of antisepsis and removal of septic teeth which were clearly indicated, albeit at that time doubtfully regarded alike by the doctor and still more by the patient. ("It beats me to understand what my teeth have got to do with my disease," as one patient in a desperate state remarked.)

The worst experience was of seeing the great majority of these earlier patients die within an average of three and two-third months from the time of my seeing them. Thus, out of my first group of 44 private cases, death occurred in 35 cases: 14 in less than a month (most of them within a few days), 16 within two months, 21 within three months, 25 within four months, 27 within five months, 28 within six months, 31 within seven months, and 35 within eight months.

That picture represents the severity and character of the great idiopathic anaemic disease which throughout my studies I have designated "pernicious anaemia"—the disease which I find to be distinguished by its glossitic and haemolytic features, the disease to which I therefore now give the title of "glossitic anaemia." Such, however, is not the picture which that disease may, since 1900, present if it be freed from sepsis and the septic anaemia which complicates it. It remains the same disease *sui generis*. But when thus freed from sepsis it presents milder clinical features and a much better clinical course than anything it was ever capable of showing prior to 1900, before the era of antisepsis in anaemia which then commenced.

Increased Powers of Recovery after Removal of Sepsis.

When sepsis is removed what is the result? Are the powers of recovery of this haemolytic anaemia thereby increased? Are the features or course of the disease when freed from sepsis and septic anaemia in any degree modified from that presented by the disease previous to 1900, when I first formulated my conclusions?

My own experience is that they are notably modified. The full true features of this idiopathic haemolytic disease, when thus freed from sepsis, have been presented to me time and again during the past twenty years, as they never were seen and never existed before. The dreadful, hopeless pictures which it formerly presented I never now see in any of my cases in whom I have been able to carry out the full measures of antisepsis I consider necessary. However severe the disease may be—and it is always severe; however sharp its individual attacks may be—and they can be of the severest character (for instance, the patient lying in a state of unconsciousness and coma for a whole week, the doctor giving no hope, and stating that the patient could not last till the morning, as in one of the last cases seen): I have time and again seen the patient recover, as if by a miracle, and restored in two or three months, sometimes even in a month or two, to an appearance of robust health and vigour, with high colour, high blood count (90 per cent.), declaring that he had never felt so well in his life. (In the case above referred to the patient came and reported herself, apparently a picture of perfect health with beautiful complexion and colour, two months after she had been at death's door.)

These results, indicating better powers of recovery of this disease, may possibly, it may be said, be due to improved methods of treatment of the disease—for instance, to the use of salvarsan, neo-salvarsan, novarsenobillon, transfusion, excision of spleen, better methods of giving arsenic, etc., of which one reads from time to time in connexion with the treatment of such cases. But in the group of 150 cases under my care during the thirteen years 1900 to 1913 I have used no new method of treatment other than the antiseptic treatment against gastro-intestinal sepsis, which I recommended for the first time in 1890, and the measures of oral antisepsis which I recommended in 1900. I have only on one occasion injected salvarsan; I have never used the other arsenical drugs of this character; I have never injected arsenic hypodermically; and finally, as regards arsenic, I have never given a dose of more than 5 minims at a time, and my usual dose has been 2 to 3 minims given by the mouth in the form of liquor arsenicalis. If my cases have shown the increased powers of recovery I have above described, as they undoubtedly have, the only new measure of treatment with which their improvement can be associated has been the great, and to my mind the all-important, one of strictest antisepsis above referred to, thereby enabling the *disease to manifest its own great powers of recovery* when freed from complicating sepsis.

III.—POWERS OF RECOVERY IN GLOSSITIC ANAEMIA.

The outcome as regards the nature of severe anaemias being as I have above stated, the results of the measures of treatment directed to the removal of sepsis may be briefly summed up as follows:

The results show a rapidity, degree, and increasing permanence of recovery of "pernicious anaemia" patients under my care of a very striking character, far exceeding anything that I ever saw before 1900, and much more common now than I ever saw up to 1900.

The rapidity and degree of immediate recovery are indeed most remarkable. Formerly I used to be quite pleased when I got a recovery up to 60 per cent. of red cells in the course of four or five months. Now I am accustomed to see rises of from 20 or 30 per cent. up to 60, 70, 80, and 90 per cent. in periods varying from one month up to three months. I show you a few of these results in eight cases of pernicious anaemia selected almost at random—seven of them from cases under my care during the past year of my hospital work. All the cases show a very immediate and striking degree of blood improvement, as will be seen by the rises set out in the following table:

34 per cent. to 76 per cent. in seven weeks, and then to 88 per cent. four weeks later.
25 per cent. to 78 per cent. in eight weeks, and then to 90 per cent. two weeks later.
38 per cent. to 76 per cent. in nine weeks.
21 per cent. to 78 per cent. in four months.
28 per cent. to 84 per cent. in two months.
27 per cent. to 67 per cent. in four weeks, then up to 90 per cent. four months later, at which level it remained (with three short breaks) for three years, and then continued for fifteen years, when the patient died of another disease.
18 per cent. to 71 per cent. in four weeks, and 102 per cent. in eight weeks.
38 per cent. to 105 per cent. in four weeks.

In comparison with the foregoing I give my experiences in the first 18 private cases I saw (1890–1901) prior to the period of oral antisepsis which I introduced in 1900:

Course of 18 Cases observed, 1890–1901.

Fatal within	1 month	8 cases.
,, ,,	4 months	13 ,,
,, ,,	8 months	15 ,,
,, ,,	1 year	16 ,,

Increasing Chronicity of the Haemolytic Disease ("Glossitic Anaemia") as shown by Percentage of Red Cells in 171 Blood Counts in 13 Cases at Various Stages up to 15 Years.

Percentage of Red Cells.	No. of Counts.	Percentage of Counts.
105–90	18	10
		— 10
89–80	14	8
79–70	22	13
		— 21
69–60	25	14
59–50	26	15
		— 29
49–40	18	10
39–30	24	14
		— 24
29–20	18	10
19– 8	6	3
		— 13

I bring out in the foregoing table the most remarkable fact regarding blood changes, probably new to you, to which I draw your special attention. That fact is the increasing chronicity of the disease as shown by the degree of its blood changes. In the mind of everyone the disease called "pernicious anaemia" is specially associated with extraordinarily low blood counts. When we think of it, we think of low percentages of 20 or 30 per cent. causing, as I have had frequent occasion to observe, most extreme alarm. These low counts are undoubtedly presented at some period or other in the course of the disease. But what is not generally known is that these low counts only occur during the acute attacks which characterize the disease, and that these attacks occur generally only once a year. They last a varying period of two to three months. But the acute stage in which the blood count is as low as 20 to 30 per cent. may last only about a month or two; and during the latter part of that period, as I have time and again seen, the patient may be feeling well and on the high road to recovery, even although his blood count remains only 30 to 40 per cent. Moreover, it is during these attacks while the patient is under observation that most blood counts are made.

Bearing the above facts in mind, the most remarkable

result that appears from the above table is that only 13 per cent. of the total counts were below 30 per cent.; 24 per cent. were between 30 and less than 50 per cent.; 29 per cent. were between 50 and less than 70 per cent.; no fewer than 21 per cent. were between 70 and less than 90 per cent.; and finally no fewer than 10 per cent. were 90 up to as high as 105 per cent.

An anaemic disease, in which 31 per cent. of the blood counts in its various stages are over 70 per cent., and 29 per cent. are between 50 and 69—a total of 60 per cent. with over 50 per cent. of red cells, including no fewer than 10 per cent. with percentages between 90 and 105 per cent.: such is the haemolytic disease termed "pernicious anaemia." One might almost say: "Even if one calls it anaemia on account of the degree of anaemia which, when active, it does undoubtedly show, why call it by the ferocious prognostic title 'pernicious,' if, as stated, it may run a course as long as ten to thirteen years, or even longer? Why saddle the sufferer with the unnecessary misery of such a name?"

The facts, in my experience of the disease, are those I have just stated, and the question thus put is one which I think is fully justified. I only know the result—namely, that the dreadful name "pernicious," having been foisted upon English medicine about fifty years ago from German sources, and given to this anaemia, to which English medicine had given the title of "idiopathic" (1855), or still more definitely "most idiopathic" (1822), is still retained, with the result that "it makes the flesh creep" whenever the name is mentioned. It hangs like a gravestone round the neck of the sufferer, not only when he is ill, but also during long intervals when he may not only feel, but actally be, very well.

If this disease throughout its entire course be not characterized by an excessive degree of anaemia, and if the degree of anaemia actually present does not prevent the patient from feeling and being very well, what other name than pernicious can be given to it to indicate that even at the times when blood counts are high (for example, 80 to 100 per cent.) the disease is still present, and may in all probability recur if not continuously watched—some name that in the absence of blood changes may indicate its presence or its possible recrudescence? A name that would in the intervals of recovery give this information and help would indeed be a godsend to the sufferer and the observer. Such a name could in my judgement be given to it—a name connoting one of the chief seats of the haemolytic infective lesions underlying this great haemolytic disease. That lesion is the curious and recurrent sore tongue—one of its earliest and one of its most persistent features—"a most peculiar glossitis," first described by me thirty years ago (1890), characterizing "a most peculiar and idiopathic anaemia."

"Glossitic anaemia" would be the name that would of all others in my experience best connote this great haemolytic disease, help in its early diagnosis even within a few weeks of its onset and in its control by treatment throughout its course, by directing continuous attention to one of its earliest and most constant, most characteristic, and most easily recognized features.

The name "pernicious" which it bears fulfils, on the other hand, not a single purpose connected with the art, science, or practice of medicine. It is false, misleading, hurtful, and harmful; it is mischievous, prejudicial, disadvantageous, disserviceable; it is unlucky, sinister, obnoxious, oppressive, burdensome; it is inauspicious, destructive, and venomous; it is bad, as bad as can be, ill-contrived, ill-conditioned, grievous, deplorable, lamentable, and pitiable; it is wrong, shocking, hateful, detestable, and confounded; it is inadvisable, unprofitable, inexpedient, useless, unskilful, and hopeless.

The measure to which it is all these is such that one of the requests I constantly receive from doctors is not to mention the name of his disease to the patient, as it would unduly alarm him!

If I might be allowed, I would make an urgent appeal to all teachers and writers, in the interests alike of clinical medicine, scientific medicine, the art of medicine, and the practice of medicine, to drive the accursed name out of the nomenclature of diseases, and substitute for it the name which I have finally suggested, which is the opposite of "pernicious"—namely, beneficial, valuable, serviceable, advantageous, profitable, edifying; propitious, hope-giving, fair, genuine, and true; unexceptionable and unobjectionable.

"Pernicious" Traditions.

Such briefly are the features of this disease as revealed to me by my studies for the past thirty-three years—one-third of the total history of the disease. In the case of any other disease of an obscure nature, new facts concerning it would be welcomed, and at once assimilated and incorporated in the body of knowledge regarding it. But in the case of this disease, it may be said that "in vain is any new information supplied." For the whole ground is already occupied—not by facts, but by firmly rooted traditions, associated not so much with the disease as with the name "pernicious"—pernicious traditions, as they may indeed be correctly termed. These traditions are that the anaemia so called is a mystery: that nothing definite is known about it; that its chief character indeed is that nothing definite can be known about it; certainly that nothing definite can be done for it; that there is little or no hope for its recovery—so little, indeed, that if it does recover it cannot have been the disease. In connexion with it more than with any other disease the current teaching was, and apparently from some recent experiences in examining students still is, expressed in the succinct formula: "Very little is known about this disease"; "Its pathology is not at all known." This teaching has sunk deep into the minds of the profession, and is equally well known to the unfortunate sufferers.

Nevertheless, the actual facts in my experience are that I know of no disease in medicine more clearly defined in all its features from start to finish than this disease; none whose pathology has been more fully worked out in all its many relations (in the blood, liver, spleen, bone marrow; in its striking infective lesions in the tongue; in its neurotoxic lesions and manifestations); none whose mode of onset, features of invasion, and clinical features and progress from day to day, month to month, and year by year, have been made more clear, or can at any time be more clearly and certainly predicted by me. Lastly, I know of no disease whose study has directly or indirectly led to the introduction of new measures of prevention, treatment, or control, applicable not only to itself but to all other forms of anaemia, and to a whole range of other general diseases.

BIBLIOGRAPHY.

The literature of the disease termed "pernicious anaemia" will be found fully detailed in chronological order in my work on *Severest Anaemias* (Macmillan and Co., 1910). It dates from 1822, when the first case was described.

1822. Combe, J. S.: History of a Case of Anaemia. *Trans. Med.-Chir. Soc. Edin.*, May, 1822.
1849. Addison: Anaemia: Disease of the Suprarenal Capsules. *Lond. Med. Gaz.*, March, 1849.
1851. Barclay: Death from Anaemia (2 cases). *Med. Times*, 1851, p. 480.
1855. Addison: *Idiopathic Anaemia: On the Constitutional and Local Effects of Disease of the Suprarenal Capsules.* London, 1855.
1872. Biermer: *A Form of Progressive Pernicious Anaemia Complicated by Fatty Degeneration.* Swiss, 1872.
1874. Unknown Writer: Pernicious Anaemia: A New Disease. *Med. Times and Gaz.*, ii, 1874. (A brief paragraph w ich first introduced the name "pernicious anaemia" into English medicine, and was based on ignorance of the existence of "idiopathic anaemia.")
1875. Pye-Smith: Two Cases of Idiopathic Pernicious Anaemia. *Virchow's Archiv*, lxiv, 1875, pp. 507-512.

The following references (1886-1922) are solely to my own work, on which the address is based:

1886. The Physiology and Pathology of Blood Destruction and Transfusion. M.D. Thesis, Univ. of Edin., 1886.
1887. On the Pathology of Blood Destruction within the Liver. *Trans. Med.-Chir. Soc. Edin.*, 1887.
1887. The Life Duration of Red Corpuscles as Ascertainable by Transfusion. BRITISH MEDICAL JOURNAL, 1887.
1888. Is Pernicious Anaemia a special Disease? *Practitioner*, August, 1888.
1888. An Investigation into the Pathology of Pernicious Anaemia. *Lancet*, October, 1888.
1889. Haemolytic Changes in the Urine in Pernicious Anaemia. *Practitioner*, August, 1889.
1839. Arris and Gale Lectures on Transfusion, BRITISH MEDICAL JOURNAL, ii, 1889.
1890. The Causation and Treatment of Pernicious Anaemia; with Notes of a Case. BRITISH MEDICAL JOURNAL, January, 1890. (A Historical Case.)
1892. The Physiology and Pathology of Blood Destruction. *Lancet*, 1892.
1899. Dental Diseases in Relation to General Diseases. Odont. Soc., Lond., January, 1899.
1900. Pernicious Anaemia: Its Relation to Infection from the Mouth and Stomach. Serum Treatment. *Lancet*, January, 1900.
1900. Oral Sepsis as a Cause of Disease. BRITISH MEDICAL JOURNAL, July, 1900; *Clinical Journal*, 1900.
1900. Oral Sepsis as a Cause of Septic Gastritis, Toxic Neuritis, etc. *Practitioner*, 1900. Cassell and Co., 1900.
1900. Histology and Infective Nature of Intestinal Lesions (a case). *Lancet*, ii, 1900.
1900. *Pernicious Anaemia.* Griffin and Co., London, 1900.
1902. The Etiology of Pernicious Anaemia (25 cases); with Historical Account. *Lancet*, i, 1903.
1902. A Case of Pernicious Anaemia: Its Infective Features and Antiseptic Treatment. *Trans. Med.-Chir. Soc. London*, January, 1902. (A Historical Case, treated in 1900, Recovery; observed for eighteen years.)
1905. Oral Sepsis as a Cause of Disease in General Medicine. BRITISH MEDICAL JOURNAL, ii, 1905.
1907. The Specific Nature of Addisonian Anaemia: Its Course and Treatment. BRITISH MEDICAL JOURNAL, ii, 1907.
1910. *Severest Anaemias.* Macmillan and Co., London, 1910.
1911. The Rôle of Sepsis and Antisepsis in Medicine. *Lancet*, January, 1911.
1913. On Haemolysis in Medicine. (The Seasonal Incidence of the Disease.) Internat. Cong. of Medicine, London, 1913.
1914. Oral Sepsis in Relation to Septic Anaemia. *Practitioner*, 1 14.
1907-21. Treatment of Anaemias. *Index of Treatment*, Wright and Co., Bristol.

STERILITY WITH REFERENCE TO THE STATE.*

BY

R. A. GIBBONS, M.D., F.R.C.S.E.,

GYNAECOLOGIST TO THE GROSVENOR HOSPITAL FOR WOMEN.

ALTHOUGH sterility is naturally of keen interest to the individual who is anxious to have a child, it is of more vital moment to the millions constituting the State. The question becomes one of national concern, for upon a good average birth rate depends the maintenance of the race. The population of a country is estimated by the balance of births over deaths, and immigration over emigration to other countries. It is quite evident that if there is a declining birth rate in any nation, and it is persistent, nothing really matters as to its wealth, ability, or accumulation of art treasures, for it is decadent, and must be considered doomed. Therefore everything which science can do to produce healthy bodies, sanitary surroundings, abundance of good food at a cheap rate, and labour with proportionate rest, should be supported by the State. We know that healthy men and women living in wedlock should "be fruitful and multiply" if in hygienic surroundings, because congenital sterility or unavoidable sterility is rare, both in men and women. Therefore it has been truly said that the percentage of sterility is the index to the morals of a nation.[1] As we know that of late years the number of children born in each family has steadily declined from its former average it is evident that this matter becomes one of State importance.

I have taken the following from the annual report of the Registrar-General, and, without producing all the figures, may state that in England and Wales, from 1897, when there were 921,693 births, with a rate of 29.7 per 1,000, the numbers have gradually fallen to 668,340 births, with a rate of 17.8 per 1,000, in the year 1917. In 1918 the birth rate was 17.7 and the civilian death rate 17.6,[2] and in 1919 the birth rate was 18.5.

Between 1840 and 1880 the birth rate of England and Wales may be regarded as having been stationary at about 35 per 1,000, so that, compared with the above, the descent to 17.8 per 1,000 is serious. In London alone, from 133,616 births, with a rate per 1,000 of 30 in 1897, there was a fall to 80,554, with a rate per 1,000 of 17.5. Even between 1877 and 1909 there was a reduction of the birth rate in England of over 28 per cent.

The tables of the present official census show that as regards natural increase—that is, the balance of births over deaths—the numbers recorded from 1911 to 1914 may only be compared with those of earlier years, but not later. The fall in the birth rate during 1915 to 1918 was from 20 to 25 per cent. below what might have been expected in normal circumstances, and can therefore be attributed to the war, but the actual amount of the figures during the intercensal period is not nearly sufficient to compensate for the deficiencies of the preceding years.[3]

The quarterly official return of births registered during the June quarter of 1920 for England and Wales shows 22,417 fewer births than for the March quarter, and of these births 12,132 were illegitimate. In the September quarter of last year there were 15,017 fewer births than in the same quarter of 1920, and 10,466 less in number than in the previous quarter of 1921. Of the births 9,876 were illegitimate.

I do not consider that we are one whit better morally than other nations, although there can be no question about our wishing to appear so in the eyes of those nations. In the case of our illegitimate children we are eager to hide them away, and, in most cases, to allow them to be brought up quite regardless of the future, so that they cannot be in later years claimed by the State, to which they might be of great use.

The following figures will appear rather startling with reference to illegitimate children. From 1897 to 1916 there were in England and Wales 72,443 illegitimate births, the proportion varying from 39.9 to 48 per 1,000 births. It is also interesting to note that from 1910 there has been a steady rise in the proportion of these illegitimate births to the 1,000 of all births, and during the same period there were 174,919 illegitimate births in Scotland, with a percentage varying from 7.04 to 7.1, and 54,801 illegitimate births in Ireland, with a percentage varying from 2.6 to 3.1.[4]

* Read before the Section of Obstetrics and Gynaecology of the Royal Society of Medicine, March 2nd, 1922.

The proof of how little care is bestowed on illegitimate children is afforded by the mortality. Dr. Stevenson found from his record that 45 per cent. of all illegitimate children were the children of domestic servants, and that, whereas the death rate for legitimate children was 0.99 per cent., it was for illegitimate children in general 9.1 per cent., and for the illegitimate children of domestic servants 8.5 per cent. during the first year of life. Dr. Amand Routh[5] states that the death rate of unmarried mothers and their offspring during pregnancy and the lying-in period is about twice as much as that of married women and their children, which shows how much could be done by better nursing and skilful obstetric help.

In Russia, before the war, I was much struck by the very large foundling hospital which they have in Moscow, admitting yearly about 15,000 children. There any newborn illegitimate child is taken and admitted without any question being asked, except, Has the child been baptized, and if so, by what name? If the child does not possess a name one is given, and although the mother may be nameless, and never known, she has the power of following up the child there by his registration number and claiming him at any time should she be in a position to do so. Thus the children are educated and cared for until the boys go into the army or navy, or are taught various trades, and the girls are trained as nurses or midwives. Hence these lives are saved to the State, whereas in this country, where we have no such institution, for our foundling hospital is not similar, the poor mother, as I have known more than once, has thrown her child on the dust heap to die, or disposed of the offspring in other ways than would have been the case had there been a similar institution where the infant would be cared for.

On discussing the possibility of starting such a foundling hospital, with its excellent clinical work, in this country on my return, I was assured that I could not get any support, that it was a premium upon vice, etc., and so my scheme fell to the ground.

Although the birth rate is falling here, it may be of interest to remark that England is not the only country in which this occurs, as the following table will show:[6 7]

Country.	Decade of Highest Rate.	Highest Rate.	1891–1900.	1912.
Denmark	1851–1860	32.5	30.2	25.6 (1914)
Norway	,, ,,	33.0	30.4	25.2 (1914)
Finland	,, ,,	35.9	32.1	27.1 (1913)
Germany*	1871–1880	39.1	36.1	14.3 (1918) 27.5 (1913)
Belgium	,, ,,	32.7	28.9	22.6 (1912)
Netherlands ...	,, ,,	36.4	32.5	28.2 (1914)
Austria	,, ,,	39.0	37.1	31.3
Italy	1881–1890	37.8	35.3	17.9 (1918)
Hungary	,, ,,	44.0	44.4	36.3
Serbia...	,, ,,	45.4	41.9	38.0
France	1801–1810	32.3	22.1	12.1 (19·8)†

* Less Mecklenberg-Schwerin and Mecklenberg-Strelitz.
† 77 non-invaded departments.

France may be considered as the best example of a pathological birth rate,[8] but France does not stand alone in showing an abnormally low birth rate.

This general decline in the birth rate cannot be attributed to the postponement of marriage, decrease in the number of those who marry, decrease in the proportion of the total female population which is of child-bearing age, or to diminishing fertility. When all the facts bearing on the matter are carefully considered, we must come to the conclusion that the voluntary limitation in the number of children born is the chief cause of this decline.

As a result of a voluntary confidential census among "intellectuals" it was found that of 120 marriages, 107 were "limited," and 13 "unlimited," and that the average number of children of each marriage was considerably under 2.[9]

A book called *The Fruits of Philosophy*[10]—an essay on the population question, published about 1874, which was withdrawn from circulation, and republished by Bradlaugh and Mrs. Besant, explaining so-called Malthusian methods of preventing conception—was the beginning of these practices being taken up and adopted by a certain number of the

educated classes. At first these methods, it may be safely said, were exclusively used by these classes, but as they became more known the directions for their use gradually percolated through the various social grades, until at the present moment very few newly married women exist who do not know all about them. The proof of this is that in a friendly society giving "lying-in benefits"[11] from 1866 to 1880, the proportion of lying-in claims rose slowly from 217 to 247 per 1,000, and then steadily declined from 1881 to 1904, when it reached only 117 per 1,000 members.

These methods are the result, in my opinion, of the increased indulgence and ever-growing luxury which existed before the war, and because those who wanted to keep in the rush of continued social engagements could only do so by curtailing expenses, and one way was to avoid having children, with the necessary expenditure attached to them. In others, to whom money was not perhaps of such immediate value, the duties and responsibilities of motherhood were too exacting to allow of thorough social enjoyment, and therefore the chance of conception must be avoided by every means in their power, with the result that if even only one child was born into the world it was a mistake, and if by chance these matters were not immediately discussed after marriage and a child was born, every care was taken that a second must be prevented.

When Malthus advanced his thesis that the constant tendency of all living beings is to increase faster than the food supply, he pointed out the immediate checks to population, as epidemics, war, pestilence, famine, etc., but that the preventive checks were moral restraint and vice—the former peculiar to man through the use of reason, the latter full of injury to general and domestic happiness. He defines moral restraint as restraint from or postponement of marriage from prudential reasons, with conduct strictly moral while unmarried; and he considered that the period of celibacy should be extended until there is a prospect of being able to feed and maintain children.

The whole question, apart from morals, is a very difficult one, for we know that if certain marriages did not take place with the distinct understanding that the birth of children was to be prevented, only on account of financial reasons, these marriages would not occur at all, and those concerned would suffer much unhappiness. But we have only to consider what is best from a physiological point of view, and what in the end leads to healthy men and women for the State.

Undoubtedly the origin of the whole trouble is the cost of living at the present day—a cost which does not seem likely to decrease for some time; and this is a matter which could only be dealt with by the State.

Many years ago, when life was much more simple than at present, there was not the same desire on the part of those marrying to prevent the advent of a family, and the more children a woman had the prouder she became of the number. Now, however, it is all changed, and the main point apparently for a couple about to be married is how they can be most comfortable on their income. In fact, the source of the decline of the birth rate is not increased poverty but the propagation of the "gospel of comfort," which has become the ethical standard for all civilized nations. Therefore the presumption is that the fall in the birth rate is due to conditions within the control of the people.

The following is an interesting table (compiled by Dr. Jacques Bertillon) as to the annual birth rate per 1,000 between the ages of 15 and 50 in four cities:

Classification.	Paris.	Berlin.	Vienna.	London.
Very poor quarters	104	157	200	197
Poor quarters	95	129	164	140
Comfortable quarters	72	114	155	107
Very comfortable quarters ...	65	96	153	107
Rich quarters	53	63	107	87
Very rich quarters	34	47	71	63
Average	80	102	153	109

The table on the correlation of the birth rate with the social and physical characteristics of the population for the year 1901 shows that the wives in the districts of less prosperity and culture have the largest families, and the morally and socially lowest classes in the community are those which are reproducing themselves with the greatest rapidity.[12]

The relation of income to birth rate has been studied in several European countries. The result of this investigation shows that the birth rate falls as income increases, and our national statistics point in the same direction.

The conclusion is obvious, that as the decline seems almost universal, and people do not change their morality in a large number of different countries at a given time without some definite cause, the determining one—a strong economic factor—is the "gospel of comfort."

Now, the test of fertility in a woman is the rapidity with which she conceives; ideal fertility would imply immediate conception after marriage, perfectly normal pregnancy and labour, and, again, rapid conception during the whole of the sexual period of life. This, however, rarely occurs. Making allowances for sources of error tending to diminish the average amount of fertility, ten is about the average fertility of fertile marriage during the whole of the child-bearing period of life.[13]

This shows how important the study of sterility becomes with reference to the State, for we know that on an average one marriage in ten is sterile, which means that during the whole of the child-bearing period there is a loss to the State of 1,000 children for every 100 marriages.

From the point of view of advantage to the State there is another matter which deserves attention, and that is the vitality of the children born. This is of the highest importance, because a woman who habitually brings into the world children who survive only a few hours or days, or are still-born, is of no service to the State, and therefore infant mortality under one year calls for more attention than has hitherto been paid to it. Important reforms, however, take a long time to mature, and we must hope that with the Ministry of Health many beneficial changes will be brought about with reference to child life.

It is difficult to state accurately how many infant deaths, or what proportion of them, are due to congenital causes. Herbert M. Rich found that in 6,866 deaths under one year of age 23.2 per cent. were due to malformations, congenital debility, and premature birth. According to Henoch,[14] for every 1,000 children born, 200 die in the first year of life. Dr. Amand Routh[15] estimates that there are four times as many abortions as stillbirths—that is, 2.2 stillbirths and 8.8 abortions to 100 live births—which means that in England and Wales 76,000 fertilized ova die annually before they are born.

Priestley said there is one abortion for every three or four full-time deliveries, and that from three to six out of every ten women abort at least once during their married life.[16]

There is another matter which has a serious bearing on the diminishing population, and that is the attempts to procure abortion, either criminally or by the use of drugs. With regard to the latter, the information given by Sir Thomas Oliver as to the use of diachylon by pregnant women in the North of England is important. It is evident from the statistics already prepared that contraceptives or limitations of the occasions of sexual intercourse, which are extensively employed, must account for the fall in the birth rate, and that this cannot be attributed to any possible decline of natural fertility. With reference, however, to both these matters, it is quite obvious that it would be impossible to collect sufficiently accurate data to be of any real value; but it may be here remarked, it has been stated that in a large Continental town, where there was strong neo-Malthusian open propaganda, one-third of the pregnancies were aborted.[17]

There is a factor which is of the highest importance with reference to the State—that is, the amount of nutriment available. Abundance of nutriment increases the number of births, and this applies to the whole of the animal world, although we know that this does not imply excessive feeding, which has an injurious effect on breeding. It is known how great is the influence of nutrition upon fertility by the results of famine, which leads to decrease of the population. It may be said, generally speaking, it is believed that the effect of comparative freedom from anxiety leads to the increase of fertility, and that the reverse conditions are followed by diminution in childbirth.

It will be interesting for those who compare the statistics of to-day with those compiled, say, twenty years hence, after the establishment of the Ministry of Health. It will be essential for that department to see that the poorer classes are provided with sanitary and well-ventilated houses, and that those in existence not entitled to come under this

description shall be swept away. This means that factory girls and those doing regular daily work in mills and warehouses will be able to be in a healthy atmosphere during the hours they are at home. Everything which is done to improve the general health of girls, and to keep it at the highest level possible, will ensure that, when they marry, they will have the best chance of conceiving, and, if the husband be sound, of bringing into the world healthy offspring.

It cannot be too strongly emphasized that, from the point of view of the State, it is not conception alone which counts, but the bringing forth of healthy children who are capable of surviving and becoming useful members of the community; and as we are on this subject, I may say that whilst there is nothing to prevent men and women marrying whilst in indifferent health, according to our present laws, I am strongly of opinion that every man and woman should, before marriage, be compelled to be medically examined. This at least would be the means, in many cases, of discovering direct evidence of syphilis, gonorrhœa, tubercle, or of insanity, or of obtaining such information as would lead to the suspicion of the existence of one or other of these diseases. Gonorrhœa may be said to be the commonest cause of absolute and relative sterility in women, probably 50 per cent. of all cases. With such a percentage this disease must have an important bearing with reference to the State.

The influence of gonorrhœa and syphilis on the birth rate is exerted in different ways: gonorrhœa lessens the birth rate by preventing conception; syphilis influences the birth rate and infantile mortality in a different and much more serious way. We know from the figures of Hochsinger [18] and of Veeder and Jeans [19] that about 40 per cent. of pregnancies in syphilitic women end in abortions or stillbirths, and of the infants born alive about one-quarter die. Dr. Amand Routh considers that about 25 per cent. of abortions and stillbirths are due to syphilis in city populations, and in rural districts the proportion is probably from 15 to 20 per cent.[20]

Elsewhere I have called attention to the influence of the gonococcus on the female pelvic organs,[21] and when I wrote that paper there were over 71,000 cases of gonorrhœa in the British army alone. Therefore the prophylaxis should be studied closely, and ought to be dealt with from a practical point of view. It ought to be our aim to stamp out this disease, and although in the light of our present knowledge total eradication is at present beyond us, we shall do most good by encouraging in every possible way any means to the end in view, and notification comes first of all.

As we are now certain that every case is a potential means of not only spreading the disease, which may be mild or severe, but of practically crippling a healthy woman for life, as well as possibly rendering her sterile, it is our duty to leave no stone unturned to accomplish our object. Doubtless there are many arguments against compulsory notification of syphilis and gonorrhœa, but we know that, owing to these diseases, the loss to the State is enormous. If we are to have healthy men and women, individual susceptibilities ought to be swept aside, and the State should have control of the treatment. The public will soon be educated to the fact that State registration can be done with the greatest privacy, and that no one will be concerned with any name but the doctor entering it, whilst officials have only to deal with figures. Therefore, all these communications will be treated as confidential State papers, open for statistics to the Registrar-General alone.

The extreme importance of registration is in order to know when a patient is pronounced to be cured. My strong opinion is that when once the name has been entered by a doctor the individual should be obliged to consider himself or herself under treatment until medically certified as well, and that he or she shall be penalized if it can be proved that intercourse has taken place before receiving a certificate of health or of having been entered in the registry as cured. By no other means can this scourge be eradicated.

Moreover, I am strongly of opinion that no marriage should be considered legal until both the man and the woman about to enter upon it have been passed as fit for the responsibility of the possible procreation of children. This may seem a harsh condition at the present time, but the people would soon be educated to the knowledge that the State would not recognize a marriage between individuals unfit for matrimony. Parents, therefore, would know that, before allowing any girl to become engaged, they must be sure that the man she wished to marry was healthy in all respects. In this way unsuitable marriages from a State point of view could be avoided. This means that a medical certificate must be obtained by each, but considering that every man and woman desirous of obtaining life assurance must be examined medically, no hardship is entailed.* Not only would this preclude the possibility, so far as our knowledge would permit, of having any sort of venereal disease, but it would safeguard the race from other affections.

Doubtless at first such an idea may be resented, but when on reflection it is considered that it is only to ensure as far as possible healthy children for our country, there is no weighty argument to be advanced against it. As it is of the utmost importance to the State to have children born into the world vigorous and healthy, it is to be hoped that the time will come when no marriage will be allowed to take place unless sanctioned from a medical point of view.

At the present moment we have no law to prevent any marriage, whatever be the circumstances or religion, in any country. If in certain cases there is strong evidence on either side to lead to the opinion that only infants likely to be mentally deficient, tuberculous, or otherwise diseased, can result from the union, then there ought to be no hesitation in asking for the consent of the man or woman, or both, to be sterilized, which would in no way prevent them living an ordinary married life. This would avoid the unhappiness likely to follow an order forbidding a marriage undesirable from every point of view to the State, and would prevent the legalizing of such unions as can never benefit the State.

No laws can ever prevent the advent of illegitimate children, but if legislation were to be passed with reference to marriage, men and women of education would not face the social consequence of running counter to the law, especially as marriage would only be denied in those cases in which sterilization was not agreed to.

It would be difficult to estimate the loss in numbers of idiots and other undesirable individuals which such legislation would produce, but such a lessened number of births would surely be received with satisfaction by those who are anxious to control the birth rate.

War will go on as long as human passions remain; pestilence may arise at any time, as witness the terrible scourge of influenza which affected practically the whole world, carrying away thousands—the deaths in England and Wales, to say nothing of shattered health, amounting to 112,329, only comparable to the mortality of the terrible epidemic of cholera in 1849; and famine must occasionally rear its head, as in the awful visitations of Russia and India. Therefore there need be no fear that there will be any dangerous increase in the population.

It is for the political economist to point out in what manner the population is to be fed, and for statesmen to follow any advice which is sound; but, from our point of view, we have to do our best to secure the birth of vigorous children, and everything in our power to make arrangements for their upbringing in such healthy surroundings as will give them the best chance of survival.

Whilst we have no power to interfere with the private lives of individuals, I consider that our profession ought to let it be known that contraceptives and anything which interferes with physiological laws cannot have our approval, and I think that, as regards the Obstetric Section of the Royal Society of Medicine, the expression of opinion of those who took part in the discussion following the paper of Dr. Arthur Giles in May last on sterility makes this clear.

I may say that I am fully aware that such a proposal as mine of a State marriage certificate means an Act of Parliament, and probably much opposition. But is there any commendable reason why we should bring into the world so many idiots to be supported by the State or otherwise, especially when the country is taxed almost beyond its capacity for paying, and when we know that there are means at our disposal to prevent their advent?

Dr. Stansfield says that heredity is one of the great factors in the production of our C3 population, and the trend of modern civilization, by its Poor Law system, and by its treatment of the unfit during childhood, tends to foster the growth of this class. The care given to physically and mentally unfit children may reduce the degree of unfitness, but if their improvement is such as to enable them to escape incarceration under the Mental Deficiency Act, they are turned out mental, moral, and physical weaklings, to return to an environment which was associated with the development of their unfitness.[22]

According to the seventh annual report of the Board of

* It is not suggested that medical examination should exceed that for ordinary life assurance, for which the family physician can give a certificate.

Control there were over 12,000 registered mental defectives, including criminal and non-criminal.

Certainly my suggestion is more humane than that of Plato, who, whilst not being opposed to marriages, wished that the offspring of the least worthy should not be reared; or of Aristotle, who was in favour of allowing children in excess of those required to die from exposure, and that all deformed children should not be permitted to live.

In conclusion, I may say first, that, as the mortality amongst illegitimate children is so great, it would be an advantage if an effort were made to save some of their lives, and if philanthropic arrangements could be inaugurated for bringing them up in healthy surroundings, so that they might eventually become of service to the State.

Secondly, that looking to the amount of sterility, and the enormous loss of life caused respectively by gonorrhoea and syphilis, it is urgently desirable that notification of these diseases should be rendered compulsory.

Thirdly, that, as I have pointed out, we have a distinct fall in the birth rate; that by the widespread adoption of contraceptives, which from a physiological point of view cannot be approved, but which we are certain will be ever increasingly used, we must not expect an average of more than two births from each marriage—possibly only one; that, as we know from a most conservative estimate there must be at least four children per marriage amongst families who can produce children, allowing for infantile mortality, those who never marry, and those who are unfit to produce children, we cannot anticipate a real increase in the population.[23] It follows, therefore, that our country is faced in the future with the problem of race suicide.

And lastly, should my suggestion of the granting of a State certificate of marriage be adopted, we should have the satisfaction of knowing that in future our profession would be the means of helping to compensate for loss of numbers by ensuring for the State the advent of healthy children—the best and surest evidence of a virile race.

REFERENCES.

[1] *Med. Gynaecology*, Kelly, page 329. [2] *International Journal of Public Health*, April, 1921. [3] *Times* Official Census Figures, August 24th, 1921. [4] Annual Reports of the Registrar-General. [5] "Motherhood," Amand Routh, *Victoria Institute Transactions*. [6] *The Declining Birth Rate, its Causes and Effects*, 1916, page 27. [7] *International Journal of Public Health*, July-August, 1921, page 425. [8] *Declining Birth Rate*, Arthur Newsholme. [9] Sydney Webb, *Tracts for the Times*, October 16th, 1906. [10] Knowlton, Essay on Population. [11] Sydney Webb, *Tracts for the Times*, October 11th, 1918. [12] David Heron. On the Relation of Fertility in Man to Social Status. [13] Matthews Duncan, *Sterility in Woman*. [14] Henoch. Lectures on Children's Diseases. [15] Amand Routh, Royal Commission on Venereal Diseases, 1914. [16] Priestley, Royal Commission on Venereal Diseases, 1914. [17] International Birth-rate Commission, 1916. [18] Hochsinger (1910), *Wien. klin. Woch.*, xxiii, 881, 932; (1898) *Studien über die hereditare Syphilis* (A. Holder, Leipzig). [19] Veeder and Jeans (1916), *Amer. Journ. Dis. of Children*, xi, 177. [20] Amand Routh, Ante-natal Syphilis, *Lancet*, January 12th, 1918. [21] R. A. Gibbons, Influence of the Gonococcus on Female Pelvic Organs, *Practitioner*, 1917. [22] Knowles Stansfield, BRITISH MEDICAL JOURNAL, December 17th, 1921. [23] Hunsberger, *Journ. Amer. Med. Assoc.*, August, 1907.

THE DIGESTIBILITY OF BACTERIA.

BY

C. E. DUKES, O.B.E., M.D., D.P.H.,

BACTERIOLOGICAL LABORATORY, UNIVERSITY COLLEGE HOSPITAL MEDICAL SCHOOL.

ALTHOUGH nitrogenous substances form the basis of bacterial cells, yet bacteria are not digested by powerful proteolytic ferments, and are capable of living and multiplying in a solution which would split up those proteins of which, by chemical analysis, bacteria have been shown to be composed. That this resistant faculty is not dependent on the fact of life is demonstrated by the experience that bacteria are also not digested when killed by weak antiseptics or at low temperatures. Owing to this property bacteria are enabled to continue their existence when surrounded by the digestive juices of the intestinal canal, and also continue to thrive in a culture medium into which enzymes have been excreted by other bacteria.

Kantorowicz[1] noted that after heating at 70° C. Gram-negative bacilli are less resistant to digestion than Gram-positive bacilli, and he assumed the presence of an intracellular antiprotease which holds the proteolytic activity in check. Kruse[2] attributed differences in survival after heating to differences in permeability of the organisms. Jobling and Peterson[3] are of the opinion that bacteria resist digestion because of the lipoids with which they are surrounded, and that this resistance is proportional to the content of unsaturated lipoids.

The following experiments were undertaken for the purpose of studying the conditions under which bacteria resist digestion, and under what conditions this protective property can be destroyed. The first stage of enzyme action is considered to be an adsorption of the enzyme on to the free surface of the substrate. The question as to whether or not bacteria are capable of adsorbing ferments was therefore first studied.

Adsorption Experiments.

It is well known that bacteria are capable of adsorbing both opsonins and agglutinins from the serum, but this action is specific and cannot be regarded as an example of simple adsorption. Porter[4] claims that membranes such as collodion sacs and egg-white films are capable not only of adsorbing but also of inactivating ferments, and suggests that living bacteria may protect themselves by the same neutralizing process.

Technique.

To test for adsorption a technique similar to that used in the agglutination saturation test was devised—namely, a dilute solution of the ferment was saturated with a heavy dose of bacteria, the tube centrifuged to deposit the bacterial mass, and the titre of the supernatant fluid compared with a similar ferment solution which had not received a saturating dose of bacteria. The ferment employed was trypsin (Burroughs, Wellcome and Co.'s "injectio trypsini" and Fairchild's "zymine"), and the titre tested by the digestion of 4 per cent. gelatin by Sorensen's method.[5] In this the degree of digestion is measured by the quantity of amino-acids formed. These are estimated from the carboxyl group liberated after treatment with 33 per cent. formalin solution, the acidity being determined by titration with N/100 NaOH. The twenty-four hours' bacterial growth from thirty large agar plates was washed off with saline and centrifuged, and again washed with saline. The bacterial deposit was suspended in as little fluid as possible, usually about 50 c.cm.

Thirty tubes were employed in each test. The first ten were used for determining the strength of the trypsin solution, and into each of them was placed 1 c.cm. of saline, followed by graded quantities of trypsin solution varying from 0.1 in the first tube to 1.0 c.cm. in the tenth tube, the total quantity of fluid in each tube being made up to 2 c.cm. with saline. The second series of ten tubes contained the same ingredients except that instead of 1 c.cm. of saline there was first placed in each tube 1 c.cm. of bacterial suspension. In the third series of ten tubes the trypsin acted on a suspension of fibrin or animal charcoal, which was used as a control to show the effect of adsorption. In some experiments the bacteria were left in contact with the ferment for only a few minutes, in others for as long as twenty-four hours. But the period of contact made no difference, nor did it matter whether the mixtures were left at room temperature or in the incubator. All the thirty tubes were centrifuged at high speed until the supernatant fluid was clear. One c.cm. of the supernatant fluid from each tube was now transferred to a sterile test tube containing 10 c.cm. of 4 per cent. gelatin, and placed in the water bath at 37° C. After thorough mixing a sample of 5 c.cm. was withdrawn from each tube and tested as above described. Digestion of the remainder was allowed to proceed, and another sample of 5 c.cm. gelatin removed after a definite period of time. The quantity of N/100 NaOH required to neutralize the first sample subtracted from the amount required to neutralize the second sample indicated the extent of digestion of the gelatin. A comparison of the figure obtained in each tube of the second and third series of tubes with that obtained in the first series of ten tubes indicated the loss sustained by the ferment after having been saturated by bacteria or fibrin or charcoal.

Several organisms were used, but the majority of the tests were made with *B. typhosus*, *B. coli*, and sarcinae. It was found that living bacteria did not adsorb trypsin at all, a result which is shown diagrammatically in Fig. 1, in which the quantities of trypsin employed are plotted against the titration readings. On the other hand, charcoal and fibrin adsorbed trypsin readily, the degree of adsorption being more pronounced in dilute than in stronger solutions. A series of experiments were made to see if organisms which had been in contact with specific immune serum could adsorb ferments. Typhoid bacilli, sensitized with antityphoid serum, were used, but were found to have no effect on ferment titre. Bacterial suspensions were made of organisms which had been boiled, autoclaved, killed with antiseptics, and others defatted with acetone, alcohol, and ether. In no case was any adsorption process observed when the supernatant fluid was tested on gelatin. It was, however, found in the case of bacteria extracted with acetone, or after boiling or autoclaving, that the trypsin after saturation, although showing no adsorption when tested on gelatin, yet showed a reduction in titre when tested on a substrate of acetone-extracted or boiled bacteria.

As will be pointed out subsequently, treatment with acetone and the process of heating renders bacteria capable of digestion by trypsin. It would seem, therefore, that adsorption does take place when bacteria are so treated as to be rendered

digestib'e by trypsin, but to demonstrate this adsorption it is necessary to employ digestible bacteria as substrate. This may be due to the fact that another fraction of the trypsin enzyme is required to attack the digestible bacteria from that required for gelatin. There are many who hold that trypsin is a compound of many proteolytic ferments.

It is perfectly clear, however, that bacteria in their natural condition do not adsorb the ferments with which they are in contact as do other foreign particles.

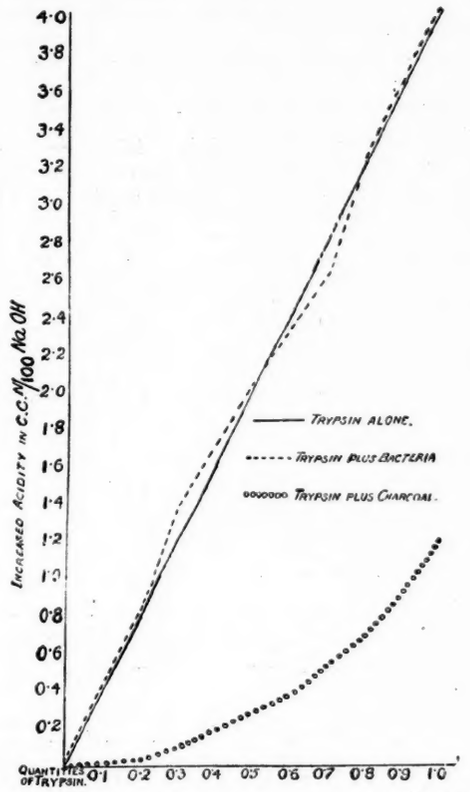


FIG. 1.—Showing effect on titre of trypsin by saturating with bacteria and charcoal.

Digestion Experiments.

Although unaltered bacteria are resistant to trypsin, yet by the application of certain chemical substances or physical processes this normal resistance may be overcome. To study the digestion of bacteria directly various methods may be employed. The simplest is to look for clearing in a turbid suspension, but this procedure is open to the objection that it does not distinguish between bacteriolysis and proteolysis, two very different processes; nor does it lend itself to exact measurement. In the experiments about to be described bacteria were digested with trypsin, and the degree of digestion estimated by the same method as that already described under adsorption experiments—namely, the rate of formation of amino-acids as the result of the digestion of the bacterial mass.

A large mass of bacteria was obtained from agar plates, the organisms centrifuged and washed and distributed in sterile tubes. Trypsin was added, a sample of the mixture removed for immediate testing, and the remainder examined after definite periods in the water bath at 37° C. Living bacteria and bacteria killed by heating for an hour at 60° C. showed no digestion whatsoever.

Effect of Higher Temperatures.—As a result of being autoclaved at 115° C. for twenty minutes all the organisms experimented with were found to be rendered capable of digestion by trypsin. Boiling for ten minutes had very little effect on the Gram-positive cocci, but the Gram-negative bacilli, *B. typhosus*, *B. coli*, and *B. pyocyaneus* were rendered easily digestible by this process. A temperature of 70° C. applied for thirty minutes was sufficient to destroy the ferment resistance of *B. coli* and *B. typhosus*.

Effect of Treatment with Acids and Alkalis.—To test the effect of alkalis and acids on bacterial antitrypsin NaOH or HCl was added to the bacterial suspension distributed in test tubes, so as to make the resultant fluids of a strength of N/2, N/4, N/8, N/16, N/32, N/64. After five minutes' contact the acid solutions were neutralized with alkali and vice versa. The tubes were allowed to stand for half an hour and then tested with trypsin. It was found that this short contact with acid had no effect on bacterial antitrypsin, whereas alkali of higher concentrations than N/10 completely destroyed the resistance of bacteria, and concentrations as low as N/30 alkali resulted in some digestion. In such experiments it is necessary to allow the alkali only to act for a short period of time because, although clearing of the solution occurs when bacteria remain in contact for a long time with weak solutions of alkali, alkali albumin is slowly formed, and this substance is not digested by trypsin. Not all bacteria behave alike when treated with alkaline solutions. Gram-positive organisms are much more resistant to alkalis than are Gram-negative.

Effect of Treatment with Fat Solvents.—Contact with acetone, alcohol, chloroform, or ether completely destroys the resistance of bacteria to trypsin. The bacterial mass may be extracted with the fat solvent in a Soxhlet apparatus, or the same result may be achieved by precipitation from an aqueous solution and allowing the bacteria to remain in contact with the fat solvent for twenty-four hours. Amino-acids are rapidly produced by digesting the dried bacterial mass with trypsin. The rate of digestion of such organisms is shown in Fig. 2.

Effect of Drying.—The bacterial suspension obtained from washing off the growth from sixty agar plates was dried *in vacuo*, and the dry powder obtained resuspended in saline and digested with trypsin. Partial proteolysis was found to take place. Similar experiments were made in which, after drying, the powder was divided into two equal parts. One half was digested with trypsin without further treatment; the other half was treated with absolute alcohol at −14° C. and dry ether at −8° C. for the purpose of extracting the fats without coagulating the protein. This was the method adopted by Teale and Bach[6] in their work on serum antitrypsin. This extraction of the fats made no difference to the extent of the subsequent digestion.

Effect of Sensitization, etc.—A number of experiments were now undertaken for the purpose of determining how it is that bacteria are split up in the body, either when injected subcutaneously or intravenously. Since the results were all negative it will be sufficient to record them briefly. Bacteria sensitized with specific agglutinating serum were not split up by proteolytic ferments. Washed agglutinated *B. coli* treated with fresh complement were not digested by trypsin. Acetone-extracted typhoid bacilli were agglutinated with antityphoid serum, and after centrifuging the supernatant fluid was tested and it was found that practically all the agglutinins had been removed. Such sensitized acetone-extracted typhoid bacilli were not digested any more rapidly than unsensitized acetone-extracted typhoid bacilli. Finally, a quantity of sterile inflammatory lymph was obtained by injecting 5 c.cm. peptone (5 per cent.) into the peritoneum of a rabbit and after eight hours washing out the peritoneal cavity. The leucocytes were removed by centrifuging. Prolonged contact with this sterile inflammatory exudate made no difference to the digestibility of the organisms employed.

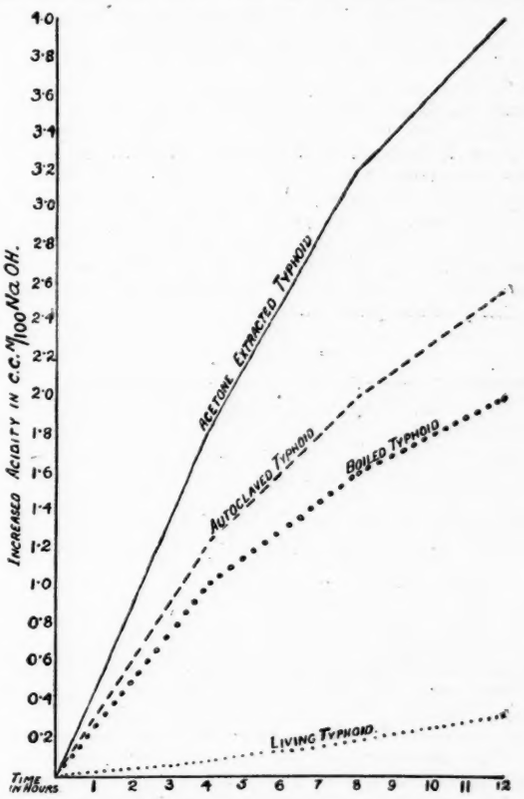


FIG. 2.—Showing digestion of *B. typhosus* by trypsin.

Discussion.

The facts above recorded are of interest from two points of view. In the first place it is seen that those agencies which most readily destroy the bacterial antitrypsin are all fat solvents—namely, alcohol, acetone, ether, chloroform, and

alkalis. The lipoids contained by bacteria, because of their effect on surface tension, are probably concentrated round the periphery of the bacterial cells, and form a protective covering to the organism. This fatty envelope protects them from proteolytic ferments, but once this has been removed active proteolysis takes place. High temperatures and drying cause a redistribution of the lipoid-protein complex, and thus, for physical reasons, disturb the protective mechanism. Therefore the antitryptic property of bacteria depends on totally different factors from the antitrypsin of egg white and blood serum.

Teale and Bach[7] showed that the antitryptic power of egg white was due to the presence of a non-diffusible protein substance which is not affected in the dry state by treatment with lipoid solvents. The same observers showed that the antitrypsin of blood serum was not dependent on the lipoids present.

Although lipoid solvents appear to destroy the antitrypsin of blood serum, they do this by coagulating the proteins. Drying had no effect on the antitrypsin of blood serum, nor was it destroyed by lipoid solvents when precautions were taken to prevent protein coagulation.

The greater resistance of Gram-positive bacilli to lipoid solvents and heat is also capable of explanation on the basis of the physical dispersion of the lipoids.

Eisenberg[8] found that staphylococci became Gram-negative after extraction with ether and that *B. coli* could be made Gram-positive on treatment with lecithin. Benians[9] observed that crushed Gram-positive organisms are promptly decolorized, and concluded that the condition of the cell wall is the factor determining resistance to Gram's stain.

In Gram-positive organisms it would appear, therefore, that the lipoids are more intimately bound to the protein of the bacterial cell, thus rendering them more resistant to lipoid solvents.

In the second place, it is important to note that exposure to specific agglutinating serum or inflammatory lymph does not alter the protective mechanism of bacteria against proteolytic ferments. It is claimed by Jobling and Peterson[10] that bacteria treated with immune serum and complement are so altered as to be made more digestible by trypsin. They state later that bacteria treated with an excess of immune serum and complement become more resistant to proteolysis. In my experiments with *B. typhosus*, *B. coli*, and *B. pyocyaneus* it was not found possible to render these organisms more digestible by trypsin through sensitization and complement action, although many attempts were made by increasing and decreasing the sensitization and varying the quantity of complement.

Conclusions.

1. Bacteria do not adsorb proteolytic ferments.
2. The protein of bacteria is protected from the action of proteolytic ferments by the lipoidal envelope with which they are surrounded. The agencies which destroy this protective mechanism act by disturbing the lipoid distribution.
3. The antibodies present in immune serum do not in any way render bacteria more digestible by trypsin.

REFERENCES.

[1] Kantorowicz: *Muench med. Woch.*, 1898, 45, 1040. [2] Kruse: Ibid., 1910, 57, 685. [3] Jobling and Peterson: *Journ. Exper. Med.*, 1914, 20, 452. [4] Porter: *Quart. Journ. Exper. Physiol.*, 1910, 3, No. 4. [5] Plimmer: *Pract. Organ. and Biochemistry*, 1920, p. 425. [6] Teale and Bach: *Proc. Roy. Soc. Med.*, Path. Section, 1920, vol. xiii, p. 16. [7] Teale and Bach: Ibid., p. 41. [8] Eisenberg: *Cent. f. Bakt.*, 1910, 56, 193. [9] Benians: *Journ. Path. and Bact.*, 1920, 23, p. 401. [10] Jobling and Peterson: *Journ. of Exper. Med.*, 1914, 20, 321.

THE third International Neurological Congress will be held at the Salpêtrière Hospital, Paris, on June 2nd and 3rd.

THE City of Paris has authorized an expenditure of 2,500,000 francs for the purchase of radium to be used in the public hospitals for the treatment of cancer.

THE seventh French Congress of Medical Jurisprudence will be held in Paris from May 29th to 31st under the presidency of Dr. Thibierge, when the following subjects will be discussed: (1) Laboratories of criminal anthropology and psychiatric departments in Belgian prisons, introduced by Professor Héger-Gilbert and Dr. Vervaeck of Brussels. (2) The spectroscope in medical jurisprudence, introduced by Professor Zanger of Zurich and Dr. de Laet of Brussels. (3) Bone and joint tuberculosis and workmen's accidents, introduced by Dr. Robireau. Further information can be obtained from Professor Étienne Martin, 10, Rue du Plat, Lyons.

SLIPPING RIB.

BY

R. DAVIES-COLLEY, C.M.G., M.Ch., F.R.C.S.,

SURGEON, GUY'S HOSPITAL.

ABNORMAL mobility of the lower intercostal joints, causing painful symptoms, is probably not a rare condition, and it is curious that it should receive no mention in the modern textbooks of surgery—at least, I have failed to discover any reference to it in the numerous volumes that I have consulted. It is for this reason that I venture to report the following two cases which have come under my observation during the past year.

Slipping rib, as it may be called, is a trivial enough complaint in itself, but it gives rise to the most irksome symptoms, and my two patients were quite incapacitated by the excruciating pain which followed any attempts to do manual work. The pain is described as of a sharp, stabbing nature, giving place after a few moments to a dull ache, which lasts for a considerable time, and may, indeed, persist throughout the day, only disappearing after the night's rest. In its position at the costal margin it resembles that due to so many deeper lesions, both of the abdomen and the thorax, that I think it is quite likely that many cases occur in which such an apparently unimportant cause as a movable rib cartilage is unsuspected, and the diagnosis is missed. It was so in one of my cases, but the difficulty here was partly due to the fact that the patient, a woman, was known to have had definite abdominal disease in the past, and to the natural tendency to attribute subsequent symptoms to this disease: still, had I been acquainted before with slipping rib as a cause of abdominal pain I think I might have arrived at a correct diagnosis somewhat sooner than I did.

The treatment is simple, and consists in resection of the loose terminal portion of the rib cartilage. In both of my two cases this was followed by immediate and lasting relief of the symptoms.

CASE I.

A single woman, aged 42, employed as a domestic servant, was admitted into Guy's Hospital in September, 1921, for right-sided subcostal pain. This had first troubled her four years before, when she fell and bruised her side, and from that time it had been present more or less constantly, being most severe when she walked much or attempted to do heavy work. Recently any effort to use her right arm had brought on such severe pain that she was quite unable to work at all, and she said that when she lifted anything heavy one of her ribs seemed to jump out of place, and that frequently a painful swelling appeared at the lower margin of the ribs. This exact description was not elicited during the earlier stages of her illness, and the diagnosis was rendered less easy by the fact that in 1918 the appendix had been removed for a basal-celled carcinoma, which led to the suspicion that her pain was due to post-operative adhesions.

In August, 1920, when I first saw her with Dr. E. P. Poulton, we decided to explore the abdomen, but at the operation the stump of the appendix was found to be healthy, and the only abnormality discovered was prolapse of the caecum and ascending colon. I performed colopexy, but this naturally enough failed to relieve the symptoms, and it was only when, a year later, she volunteered the information about the slipping rib that the real cause of her pain became apparent. It was now obvious on palpation that the tip of the tenth rib cartilage could be freely moved upwards in front of the ninth, and that this movement produced the pain of which she had for so long been complaining. Removal of the terminal three inches of the rib cartilage effected a complete cure.

CASE II.

A girl, aged 17, complained of sudden acute pain in the left side whenever she bent forward or attempted to lift anything heavy. She stated that one of her ribs had been "out of place" for some months, and on examination it was clear that the tip of the tenth left costal cartilage slipped over the lower border of the ninth rib and jutted forward beneath the skin when she flexed her body. This slipping movement of the rib was accompanied by an acute twinge of pain, which left a dull ache under the rib margin for several minutes after the rib had fallen back into place. In this case, too, removal of the terminal portion of the cartilage was followed by complete relief of the symptoms.

Very definite conclusions cannot be drawn from two cases, but it is noteworthy that both of the patients were of the female sex, and that one gave a definite history of an injury as the starting point of her symptoms. In both the pain was referred to the exact position of the affected rib, the undue mobility of which could easily be demonstrated, and in both the symptoms tended to increase as time went on.

THE RESTRICTION OF INFLUENZA EPIDEMICS IN SCHOOLS BY THE USE OF "LOCAL" PROPHYLACTIC VACCINES.

BY

A. I. SIMEY, M.D.CANTAB., M.R.C.P.,

MEDICAL OFFICER TO RUGBY SCHOOL AND PHYSICIAN TO THE HOSPITAL OF ST. CROSS, RUGBY;

AND

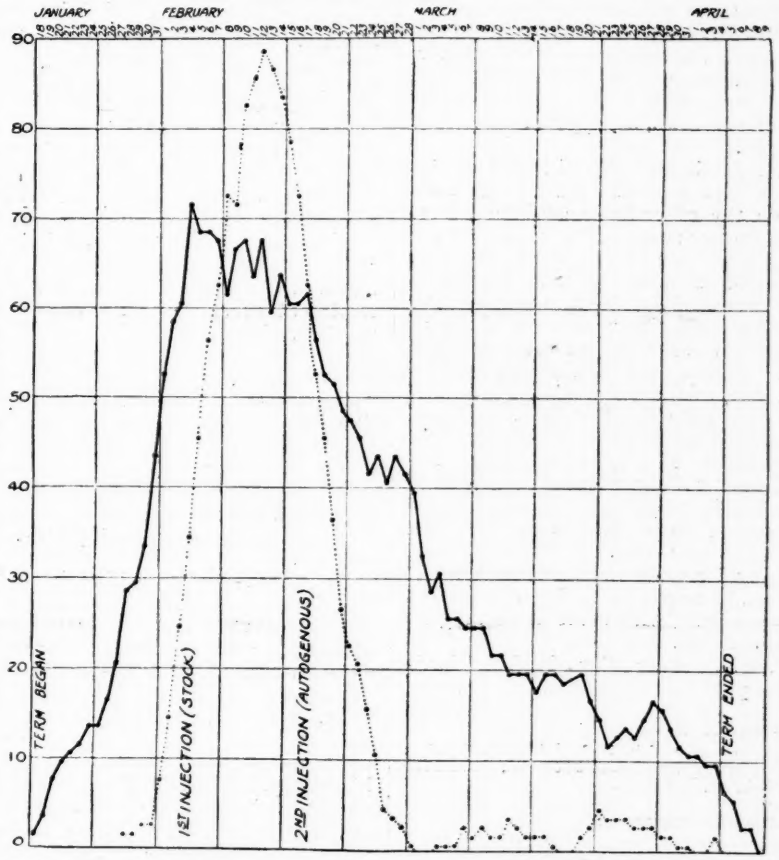
JOHN W. H. EYRE, M.D.DUNELM., F.R.S.EDIN.,

PROFESSOR OF BACTERIOLOGY IN THE UNIVERSITY OF LONDON, AND BACTERIOLOGIST TO GUY'S HOSPITAL.

IN a recent communication one of us (A. I. S.[1]) described and discussed in general terms the catarrhal complex which so frequently attacks in epidemic form aggregations of adolescents such as are found in all public schools, and which causes the loss of so many school hours. In this communication we wish to refer to a particular outbreak of this character, and the means adopted to control and limit its spread.

During the summer term of 1920 an epidemic of febrile disease of severe influenzoid type occurred at Rugby School. Out of a total of nearly 600 boys 260 were attacked, causing the loss of about 5,000 school days to the patients themselves, as well as interfering with the work, games, and social life of those who escaped. Many of the boys were seriously ill, and suffered from manifold complications such as those described in the paper already referred to.

It originated probably from one or two boys who were sent back to school in a catarrhal condition, not technically "ill," but probably carriers of the micro-organisms which caused this outbreak; and it spread rapidly, first by houses and then by forms, until most of the susceptible succumbed.



Curves showing the progress of the "influenza" epidemic, Lent Term, 1921. Black continuous line = cases admitted to sanatorium. Dotted line = cases ill in "houses."

It is not our intention to describe this epidemic but rather the subsequent train of events, in the hope that certain definite points may be established as to the cause and prophylaxis of this serious infliction, which disturbs the health of our boarding schools more than any other single factor.

During the following Advent term (1920) only 40 to 50 cases, mild in type, occurred, doubtless because the immunity of the school was high, such immunity lasting probably three to six months in average cases.

As it seemed more than probable that another outbreak was to be expected in the following Lent term of 1921, a circular was sent to parents asking them to have their boys inoculated during the Christmas holidays with suitable doses of vaccine, no special brand being specified or advised. This request was complied with in the case of only 123 out of about 570 boarders; the remaining 450 came back uninoculated and susceptible. Trouble soon began, and the infection spread so rapidly that it was thought advisable to attempt to limit its incidence by inoculating all those who had not been so treated in the holidays—if they had not already succumbed. To this end nearly every boy who had not been vaccinated at home or contracted the disease was inoculated with a stock vaccine prepared from those strains of micro-organisms that had been used in the prophylactic inoculations carried out among the New Zealand Expeditionary Force during 1918–19,[2] and which had the following composition:

Dose No. 1.

Pneumococcus	50 million.
Micrococcus catarrhalis	25 ,,
Streptococcus	10 ,,
Bacillus pneumoniae	50 ,,
Bacillus influenzae	10 ,,
Staphylococcus aureus	200 ,,

In view of the urgency of the situation no exhaustive bacteriological examination of this epidemic was possible, but ten recent cases of the acute and subacute types, which had been admitted into the sanatorium on February 10th, 11th, and 12th, 1921, were selected for examination. The throats and nostrils were swabbed and cultures instituted upon blood agar from these swabbings. After incubation the resulting cultures showed that in four of the acute cases the *Bacillus influenzae* of Pfeiffer was the predominating organism, and it was also present in three of the remaining six acute and subacute cases. The organisms in the remaining cases comprised *Bacillus septus*, *Micrococcus catarrhalis*, *Staphylococcus pyogenes aureus*, *Staphylococcus pyogenes albus* (haemolytic type), *Streptococcus lanceolatus* (pneumococcus), and *Streptococcus pyogenes longus*, this last-mentioned organism being represented by two distinct types, *haemolyticus* and *viridans*. All the different strains of each of the above-noted bacteria were isolated in pure culture.

From the material thus obtained a special "local" vaccine was prepared, and the vaccine was polyvalent in the sense that all the strains available of each of these organisms were utilized in the vaccine. Strains from other sources were also incorporated in the vaccine whenever necessary, so that ten strains of each species were present, this polyvalency being of special importance in our opinion in respect of the influenza bacillus itself. In addition, strains of the *Bacillus pneumoniae* were included as a precautionary measure, although this organism had not been actually demonstrated in any of the Rugby cases.

The actual composition of the vaccine employed for the second dose, which was injected fourteen days after the first dose, was as follows:

Dose No. 2.

Pneumococcus	100 million.
Micrococcus catarrhalis	75 ,,
Streptococcus	50 ,,
Pneumobacillus	100 ,,
Bacillus septus	100 ,,
Bacillus influenzae	30 ,,

The dosage of the various components of this prophylactic vaccine will no doubt be regarded as exceedingly small when contrasted with those recommended by the Ministry of Health in connexion with the anticatarrh vaccine supplied by that body. It is, however, dependent upon the selection of strains and the distance from the human host of the particular cultures furnishing the antigen, in accordance with principles already laid down,[3] and need not, therefore, be discussed here.

The accompanying diagram shows the daily case incidence throughout this epidemic, under the two headings: those admitted to the sanatorium (black continuous line), and those ill in their respective boarding houses (dotted line); so that to obtain the number of cases under treatment on any given day it is necessary to add together the sum total of both groups.

The general results may be briefly summarized in tabular form, and the following statistics, showing the percentage of those who succumbed, more or less speak for themselves:

(*a*) Those who received both vaccines at school ...	7.3
(*b*) Those who were inoculated at home	41.0
(*c*) Those who were not inoculated at all	81.0
(*d*) Those who received only the initial stock vaccine at school	84.0

The number of individuals comprised in these four different classes totalled 565. Class (*a*) comprised 232 individuals, of whom 19 became infected. Class (*b*) comprised 123 individuals, and yielded 52 cases. Class (*c*) contained 160 boys, and no less than 130 cases came under treatment. Only 50 boys fell into category (*d*); out of these 42 succumbed. These figures show a total of 243 cases infected.

Grouping classes (*a*), (*b*), and (*d*) together we arrive at a total of 405 boys who received one or more inoculations, from whom the combined number of cases totalled 113—in other words, an incidence of 27.9 per cent., as opposed to 81 per cent. among the uninoculated.

By way of comment it must be recognized that Class (*a*) probably includes many of the naturally least susceptible cases, whereas Class (*c*), on the other hand, consists almost entirely of those who, being very susceptible, contracted the disease before the first inoculation was given at school. Class (*d*) represents the well-known fact that susceptibility to infection is temporarily increased by the first of two such inoculations, and this constitutes the "factor of danger" when preventive inoculations have to be undertaken in the presence of an epidemic. In the case of Class (*b*) various vaccines were used—one, two, or three doses being administered according to the varying home circumstances.

During the following summer holidays parents were again requested to have their boys inoculated before their return to school with the special "local" vaccine referred to. In some instances this was done, but in many instances the second dose was given after the boys' return to school, and again many received no prophylactic treatment. The total number of cases that occurred during the subsequent Advent term of 1921 was 21 only. Of these, 8 occurred in boys who had received prophylactic inoculations, whilst the remaining 13 occurred amongst the uninoculated.

We are indebted to W. W. Vaughan, Esq., M.V.O., Headmaster of Rugby School, for permission to record these results and figures.

REFERENCES.

[1] BRITISH MEDICAL JOURNAL, January 28th, 1922. [2] *Lancet*, October 12th, 1918, and April 5th, 1919. [3] BRITISH MEDICAL JOURNAL, November 9th, 1912, and *Proc. Roy. Soc. Med.*, xii, 1919, 93-97.

ALUMINIUM THROAT SWABS.

BY

LACHLAN GRANT, M.D., C.M., D.P.H.EDIN.,

F.R.F.P.S.GLASG., J.P.,

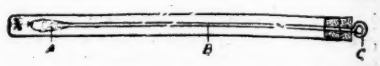
BACTERIOLOGIST, DISTRICT COMMITTEES, ARGYLL COUNTY COUNCIL; MEDICAL OFFICER, FEVER HOSPITAL, LORN.

A few years ago[1] Dr. William Murdie and the writer drew attention to an improved throat swab made from aluminium wire. Since then inquiries regarding it have come in to this laboratory from time to time, and its further extensive use by us and others have confirmed the claims made for it.

The ordinary types of swabs now in use have several serious drawbacks and disadvantages, and a more efficient kind of instrument seems to be called for. Those made of copper, iron, steel, or thin nickel wire are somewhat easily tarnished, and if left lying in a climate the least damp are very liable to become discoloured and unsuitable for use. Copper and nickel are apt to develop verdigris or a green colour from the soluble copper and nickel salts, and brown discoloration is also likely to happen with those made of iron, which develop "rust" or ferric oxide. Such swabs, after being in use or laid aside for a time, acquire an unattractive and unhygienic appearance, and are not the sort of thing to ask a patient to admit to his throat. The pledget of sterile wool is also likely to be stained, and as the soluble copper and nickel salts are germicidal, these may more or less invalidate the bacteriological diagnosis.

By the use of the aluminium wire these and other undesirable accompaniments are obviated. It is easily moulded to shape and yet is sufficiently rigid for swabbing purposes, and it keeps bright and clean. No matter how often used, or even if kept for a considerable time, the aluminium swab never has the soiled or discoloured appearance of those made from other metals. It stands boiling well and is easy to clean and redress. Again, aluminium contains in its composition no harmful bactericidal elements.

The addition of the safety ring (see illustration) avoids the holding of the cork and gives a more complete control over the movements of the swab, thus minimizing the risk of introducing organisms other than the patient's own. In the ordinary one, as usually made, there is always the risk of the metal slipping from the cork, which is avoided by this firmer type. Aluminium being so light, the cost of the wire is very small. The best thickness to use is that known on the aluminium wire gauge as E 14 S.W.G. As there is no fear of "rusting" or "greening," the cotton-wool pledget may, if desired, be held under the running tap before swabbing the patient's throat, thus ensuring a good sample of the infected secretion, and also retarding the drying effects of transmission through the post, etc.



A, Flattened and grooved end to grip wool. B, Aluminium shaft—never tarnishes. C, Ring to grip and guide the swab.

The throat swab is a useful item in the practitioner's armamentarium, and the aluminium wire swab holder, well made, will be found helpful in the diagnosis, prognosis, and treatment of some of the diseases met with in everyday practice. We know it is practically impossible, without a bacteriological examination, to make sure whether a patient who complains of a sore throat is suffering from diphtheria, "mixed" throat infection, Vincent's angina, follicular tonsillitis, or an infection by the *Tryponema pallidum*. Complete tests thoroughly carried out from start to finish are invaluable in speedily determining or in eliminating certain or all of these diseases and so removing the anxiety attached to an undecided clinical diagnosis. In attaining this, a hygienic, safe, clean, light, and easily handled swab is an important adjunct.

Of course, whatever kind is used, it is important to take the necessary precautions to avoid its contamination. The pledget of wool for conveying the suspected material is necessarily small, and in gently rubbing the infected surface care must be used that the wool on its introduction or withdrawal does not get soaked with saliva or other oral secretions. One has also to remember that the use of antiseptic gargles prior to use may interfere with the results to be obtained from the cultural tests when the swab reaches the laboratory. It may be further mentioned that the aluminium swab can also be made longer for special uses, as, for example, in the taking of material from uterine infections.

I am indebted to Mr. I. H. MacIver for the sketch illustrating the points described.

REFERENCE.

[1] *Caledonian Medical Journal*, April, 1913.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

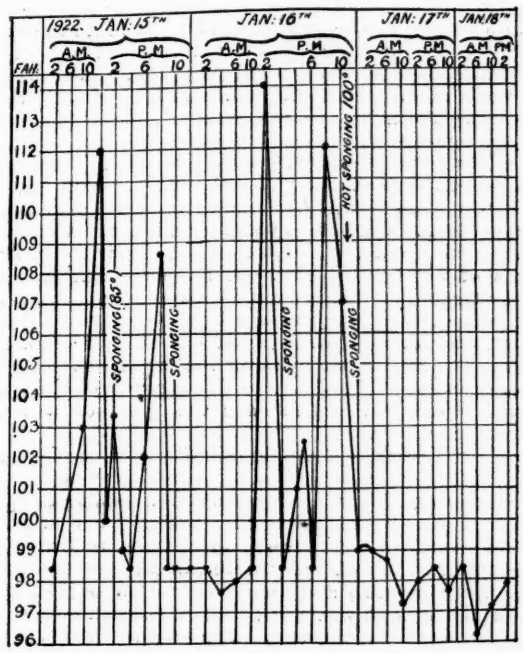
INFLUENZA WITH EXTREME HYPERPYREXIA.

PUBLICATION of the following case of influenza accompanied by extreme hyperpyrexia (temperature 114° F.) may be of interest, especially as some mention of it has been made in the lay press:

On January 15th I was called to see a maid who had been exposed to influenzal infection on January 9th and developed the usual symptoms of malaise, backache, headache, and slight fever, January 12th. On the morning of the 15th she felt worse, with excruciating pain in the back and a temperature of 103° at 9 o'clock. I examined her at noon. She was very pale, the skin moist but not excessively hot, the pulse of good volume and regular, the rate 120. The heart was normal. Great tenderness was present in the left lumbar region. She had vomited several times, felt faint, and had not passed urine for nearly twenty-four hours. The abdomen was soft except for faecal masses, and there was no evidence of a distended bladder. When I took the temperature the thermometer registered 112° in the axilla. She

was too delirious to take it in the mouth. Thinking there must be a mistake I shook the thermometer down and took it again, with the same result. I then used two other thermometers with the same result, after excluding any other source of error, such as a hot-water bottle. I held the thermometer in the axilla and the girl kept still during the process. She was at once sponged with cold water (85°), and the temperature rapidly fell to 100°. After a small rise at 2 p.m. it fell to 99°.

Dr. Carey Coombs examined the case with me. The maid had a few spots on the chest, intense pain in the back, and transient rashes on the arms and legs. The heart was not enlarged, but the recurrent faintness made me fear a fatal collapse at any time. Nativelle's digitalin, gr. 1/240, was given two-hourly, and the patient encouraged to take brandy and milk with soda. The intense pain in the back continued, but the temperature remained down till 7 p.m., when it rose to 105°. Sponging was recommenced, but the temperature reached 108.6° before it was brought down to normal. The patient passed an extremely restless night with frequent vomiting. Next morning a turpentine enema was given, with small result of almost stony hard scybala, the patient passing urine at the same time. At 2 p.m. the temperature rose rapidly to 114°, the patient looking extremely ill, and a fatal result appeared imminent; but sponging at once brought down the temperature (which had been carefully confirmed by secondary readings on other thermometers). This was again taken in the axilla. The pulse was regular, the rate 120, but poorer in volume and tension



than previously. In view of the sickness the digitalin was withdrawn and camphor in olive oil was given intramuscularly in its place. The pain in the back was decreasing and vomiting thenceforth became steadily less. At 8 p.m. the temperature again went up to 112°, but as soon as the face and arms were sponged, and before their effect could have been produced, the temperature fell to 107° and to 99° an hour later.

So far no antipyretic drugs had been given for fear of their action on the heart. Cryogenin 0.5 gram was then commenced four-hourly. The patient passed a good night and appeared much better in the morning. A turpentine and olive oil enema had a large result, and from this point on the patient made uninterrupted progress. On January 27th the patient commenced normal menstruation, which lasted four to five days. A week later, when it had been arranged for her to go to a convalescent home, she twice walked in her sleep—on February 1st and 3rd—going downstairs to the rooms of the ladies of the house and asking irrelevant questions about household duties. On being taken back to her room she at once continued apparently normal sleep, instead of waking, as so many somnambulists do on being returned to bed. These nocturnal peregrinations may have been caused by excitement in the preceding day, in spite of every effort to avoid such a condition. The girl is aged 22, one of a family of seventeen, not robust, of a markedly hysterical temperament, and distinctly lacking in mental balance and restraint, though not sufficiently so to be classed as mentally deficient.

That the girl recovered I attribute to the fact that the high temperatures were of short duration, that cardiac tonics were given before the heart showed signs of collapse, and that throughout I had the help of two invaluable nurses who acted with commendable promptitude. As to the accuracy of the temperatures, I certainly doubted, but after every possible source of error had been eliminated I was compelled to accept what I had previously regarded as the impossible.

Clifton, Bristol. ELLIOTT T. GLENNY, M.B., B.S.Lond.

Reports of Societies.

RELAPSING FEVER IN INDIA.

THE problem of the epidemiology of relapsing fever, as it occurs in India, was the subject of a paper read on February 16th before the Royal Society of Tropical Medicine and Hygiene by Major F. W. CRAGG, I.M.S., of the Central Research Institute, Kasauli, whose observations were largely based on personal investigation and experiment. He drew attention to the fact that overcrowding and dirt were almost universal from long-established custom amongst the peasant populations of India, and by favouring the spread of pediculosis presented many difficulties in dealing satisfactorily with the question of relapsing fever. Moreover, the harbourage of lice, as a normal condition, in Major Cragg's opinion, robbed this important factor in the transmission of the disease of much of its significance. Louse infestation among the warmly clad races of Europe and Asia was highest in winter, but with the scantily clothed natives of Northern India, where the disease was endemic, relapsing fever reached its highest during the hottest months of the year. Its distribution, most marked in the United Provinces and endemic in the Punjab, was by no means general, for it did not prevail in Bengal, Assam, and the southern part of India, largely rice-growing districts, whereas its greatest prevalence was found in the wheat-growing tracts of Northern India, coinciding with the ripening of the spring crop. In contrast to other parts of the world typhus and relapsing fever were not associated in India, and Major Cragg was puzzled to explain the apparent absence of typhus. The origin of the epidemic of 1917 was attributable to some common cause affecting numberless foci in the northern districts where the disease had previously been prevalent. By means of a "relapsing fever index," derived from the study of seasonal prevalence and special age incidence, the disease was defined as occurring more heavily in certain districts than others, with a duration of epidemic conditions amounting to about two years. The outbreaks, in Major Cragg's opinion, could not be explained by changes in the conditions of the people at the time of onset, such as exceptional poverty or movements of the population. An underlying cause, therefore, had to be sought for in some additional and hitherto unrecognized factor. Towards the solution of this problem and to confirm the work of French investigators, the aid of experiment was brought to bear. Emulsified preparations of lice, collected from relapsing fever cases, were injected into five monkeys without producing any obvious illness. However, injections of 2 c.cm. of infective blood, containing the spirochaetes, into a fresh monkey proved more successful, and the animal became definitely ill; 10 c.cm. of its heart blood withdrawn under an anaesthetic provided material for further experiment; 5 c.cm. were injected into another monkey subcutaneously and 1 c.cm. into each of the five monkeys previously inoculated with emulsified lice. All showed rises of temperature, two having definite two-day fever, and in three spirochaetes were found in film preparations of their blood. Dissection of lice at intervals of two to seventeen days after being fed on cases of relapsing fever and on an infected monkey resulted in the finding of spirochaetes only in those fed on the seventh to the eleventh days.

Major Cragg, having succeeded in confirming the results of previous workers, which established the louse as the vector of Indian relapsing fever, turned his attention to the bionomics of the insect host. He made a number of observations in the habits and activities of the louse under conditions comparable with those in an Indian dwelling and amid the climatic changes of temperature and humidity occurring from month to month on the Indian plains. His experiments showed that, corresponding with rises in atmospheric temperature, and as it approximated to that of the human body at the end of March and in April, so the temperature and humidity of the average Indian house provided optimum conditions for the insect. Its movements and productivity became accentuated, but as the season advanced and hot weather set in lice tended to die off and become scarce. The seasonal activities of the insect, therefore, closely corresponded with the period of greatest prevalence of relapsing fever. Explanation of the epidemic in 1917, a year of abnormal climatic conditions in India, was to be found in the fact that the months of April, May, and June experienced temperatures below the normal and high atmospheric humidity, and therefore conditions favourable to the prolonged life of the louse.

In consequence the normal period of its activity was much extended, and with it there occurred a great increase in prevalence of relapsing fever, attaining to a formidable epidemic in the early months of 1918, when optimum conditions returned. Similar abnormal climatic conditions recorded in 1877, Major Cragg argued, would explain the severe epidemic which developed in that year, and was the subject of Vandyck Carter's classic report. The low temperatures of the first six months in 1877 were ascribed to heavy snowfall in the winter, and in 1917 to great rainfall in the spring. In each of these two years there was a failure of rains in the following autumn, and with it famine occurred. Therefore, famine and relapsing fever appeared attributable in some measure to a common cause and did not stand to each other in the relationship of cause and effect. The value of this conclusion, it was observed, pointed to the importance of appreciating the effect of climate on the prevalence of the disease. In the event of an unusually cool summer a study of the monthly vital statistics for a rise in the death rate of young adults should lead to local investigation and examination of blood films, and thus to possible timely discovery of the disease before the epidemic became serious.

The high incidence among young adults, in Major Cragg's opinion, was perhaps due to their habit of crushing the louse between the finger and thumb nail, thus setting free the spirochaetes, which may penetrate the soft tissues under the nail; whilst sex incidence was probably explained by the greater liability of males to skin abrasions, whereby the spirochaetes might obtain access to the blood stream.

REMEDIAL EXERCISES IN SCOLIOSIS.

A DISCUSSION on "Remedial exercises as applied to scoliosis" took place at a meeting of the Section of Orthopaedics of the Royal Society of Medicine on March 7th, when Mr. E. LAMING EVANS presided over a very large attendance, including many lady instructors in gymnastic exercises in schools and clinics. It was noteworthy that throughout the discussion the scoliotic subject was referred to in the feminine gender, although one speaker said that the worst cases of curvature he had ever seen were in some Eton boys of a generation ago, when the youth who did not of his own initiative enter into sports was apt to be neglected.

Mr. MCCRAE AITKEN, in opening, described the two main uses of exercises in scoliosis as being (1) to increase mobility by stretching tight structures, and (2) to establish good positions by teaching the patient to use her muscles properly. No surgeon or gymnast ever cured a case of scoliosis, though a patient might cure herself under a gymnast's guidance. If the deformity was at all rigid, so that the patient could not by voluntary effort improve her position, the first stage of treatment must be a series of active movements designed to loosen the joints and secure more mobility. If the patient could voluntarily correct herself and could hold the correction it was time to begin re-education. The patient must understand the nature of the deformity, and by the use of mirrors get accustomed to see herself corrected. She must be shown how, by taking certain positions, the deformity could be modified; her attention must then be directed to her own muscle sensations on assuming the correct position, and following upon this certain exercises must be employed, of which thigh movements, influencing the lumbar region, were the most useful, and the patient should be taught, having gained the muscle sense, to apply these movements to the ordinary occasions of her everyday life; without such application no amount of exercise was of any real use.

Mr. E. B. CLAYTON divided scoliosis into three groups postural, borderline, and fixed. In postural cases, while there was no fixed curve, the patients required individual attention until they learned to stand and sit properly. Young children were very likely to relapse into the scoliotic posture, no matter on how many occasions they might visit the hospital clinic; therefore adequate treatment necessitated re-examination at intervals during school life. In borderline cases, where there was a slightly fixed scoliosis, he found the trouble liable to recur whenever treatment was stopped, so that here it seemed necessary to go on inspecting the children's backs until they reached adult years. In the severe cases, with fixed curvature, not much improvement could be obtained in posture, but the back could be strengthened and the general health improved. Therefore he advocated remedial exercises in scoliosis (1) to relieve backache, (2) to improve the general health, chest development, and posture, and (3) to prevent the fixed curve from increasing, even though it could not be eradicated.

Dr. FLORENCE BARRIE LAMBERT said that in orthopaedic surgery the British nation was pre-eminent, but as regards remedial gymnastic exercises we had scarcely advanced during the last twenty-five years. The same exercises were still being taught as were taught a generation ago in Sweden, based on the knowledge of orthopaedics then available. How many orthopaedic surgeons and physiotherapists believed nowadays in the so-called pressure exercises? Yet the teaching of these exercises took up very nearly half the time occupied in teaching remedial gymnastics. She classified scoliosis into postural, structural, and intermediate conditions. The postural was due to imperfect balance and, as a rule, was better treated by educational gymnastics given daily in schools, with proper attention to hygiene and general physique, than by remedial exercises. As for the structural condition, nobody advocated that the fixed curve should be treated by remedial exercises only. There remained the intermediate class, and here the speaker was uncertain whether the right kind of exercises were being given. Some agreement ought to be reached on this question, and she suggested that a committee of orthopaedic surgeons and physiotherapists should be formed to inquire into the present syllabus of the Chartered Society of Massage and Medical Gymnastics, because she thought that there was at present a great waste of children's time through useless and ill-directed treatment. The adult who was given ineffective treatment had his remedy, but not so the child, especially when the treatment was provided by the local authority. She wondered at times at the psychology of some of the people who were working in clinics—whether they were not the victims of self-hypnotism. Usually no notes were taken, yet they spoke of wonderful results, while all that the visitor could see was a mass of derelict cripples. A large percentage of the children treated in clinics should not be there. At one clinic which she had officially inspected a well-known orthopaedic surgeon, on taking it over, ruled out 60 per cent. of the children as not suitable cases for the treatment. She urged that surgeons should not advise the sending of children for remedial treatment which was not part of a hospital orthopaedic scheme.

Mr. PAUL BERNARD ROTH described a system of exercises which had been introduced by his grandfather and modified by his father and himself. It consisted in putting the patient in the best possible position and exercising her in it. The standard exercises were twelve in number, and were given daily—exercises twice a week were almost useless—for from one to three months, and the re-education of the muscle sense of the patient was carried out coincidentally with the strengthening of the muscles. The exercises were: (1) Deep breathing, lying; (2) arm movements, lying; (3) thighs opposite bar, standing; (4) leg circling, lying; (5) head movements, lying; (6) astride, sitting; (7) arm circling, lying; (8) leg circling forwards, lying; (9) half forwards, lying, heels fixed; (10) arm flexion, lying; knees bent, and head extension, lying; (11) long sitting, heels fixed; (12) standing back to ladder, also hanging back to ladder. He believed that the system of exercises as taught in England to-day and carried out by masseurs was based on a wrong principle, and should be given up, and that in its place there should be such a simple set of exercises as he had described, carried out under the direct daily personal supervision of the surgeon, who must himself take part in the treatment.

Dr. R. T. TIMBERG stood by his old faith in Swedish gymnastics, whose foundations had stood the test of time for the treatment of spinal curvature. He admitted that the varying aspects of a complex problem like scoliosis must be taken into consideration, and he was not such a slavish follower of the Swedish system as to claim its sufficiency for all forms of scoliosis; but he believed it to be the most judicious scheme yet devised, and the one which adapted itself to the greatest number of conditions. He thought that correcting jackets were less enthusiastically advocated in this country than was the case ten years ago, but the use of such jackets rendered exercises more, not less, necessary.

Dr. CARL WESTMAN referred to the extraordinary variance of opinion recorded in the textbooks with regard to certain mechanical factors in spinal curvature, and urged that much more research work was required to find out exactly how curvatures began. This subject had not been sufficiently studied, so far as the beginnings of the condition were concerned, in infancy. The electrical department might be of

assistance in discovering which muscles should be re-educated and which muscles taught to relax.

Dr. J. B. MENNELL said that very few of them could affirm that they were satisfied with the present treatment of scoliosis; at the same time there was a good deal to be said for existing methods. Although many of the attempts to alter curvatures or to correct deformities might lamentably fail, there were certain pleas to be urged for the treatment commonly given, even for that form of it which was generally decried—namely, manual correction of deformity. There must be something in such manual correction. The Americans were not a people of ill-balanced mind, yet vast numbers of them had their pet osteopath, to whom they went at intervals to be "limbered up." It was not the deformity to which people objected, but the symptoms. No possessor of a flat foot—which might be regarded as analogous to scoliosis—objected to the flat foot itself, but to the rigidity and the symptoms which it provoked. By manipulation of the foot, pain and discomfort could be relieved, and it was the same with the manipulative measures for the relief of the back symptoms and the maintenance of mobility. He insisted, as other speakers had done, that it was the patient who cured herself, not the physiotherapist who cured her; and in this connexion he suggested that elaborate instrumentation was a disadvantage, because it gave the patient the notion that cure would not depend upon her own efforts. The simpler the appliances, therefore, and the greater the challenge to the patient's own exertion, the better.

Mr. R. C. ELMSLIE said that he always classified his cases into postural and structural. He asked himself in the presence of any curve whether he could produce that curve in a normal child of the same age by manipulating the spine; if he could, it was obviously a postural condition, which could be completely corrected, and if he could not, there was a structural abnormality. His examination of children in secondary schools showed 17 or 18 per cent. of them to have postural curves, and this proportion was lower than figures given in literature; some Continental investigations showed a proportion as high as 25 per cent. Was individual remedial treatment to be advocated for all of these? He believed that in these cases the call was for physical education, not for remedial exercises. As for the structural curve, the thing of first importance was to find what produced it, and to catch their cases early. It was necessary to weed out from remedial gymnastics the things that were useless, or that were liable to be misunderstood and therefore wrongly applied, and to add to the treatment all the lessons which could be gained from general educational gymnastics.

Mr. T. H. OPENSHAW also referred to the inclusion of two distinct conditions under the name of scoliosis: one in which the spine was quite movable, and the other in which the bones had become altered and the curvature fixed. In Germany and Sweden one never saw such fearful cases of scoliosis as were presented among East End children in London, so that the treatment which was quite proper and efficient for scoliosis as defined by Swedish writers was not efficient in these severe cases. Many bad cases of scoliosis were due to pathological softening of the bone or to caries, and the co-operation of the orthopaedic surgeon should be more constantly sought. One method of treatment in severe scoliosis which ought to be emphasized was the provision of the spinal plaster bed, which ensured—what could not be ensured in the case of any person by voluntary effort alone—that the patient would lie flat on his back throughout the night. Without this fixed support, exactly fitting the back, every person, whether his spine be normal or abnormal, would turn on his side in sleep.

After some further discussion it was agreed that an endeavour should be made to bring about a conference between the Councils of the Chartered Society of Massage and Medical Gymnastics and of the Orthopaedic Section, with a view to the possible revision of the syllabus of remedial exercises.

EXPERIMENTAL PATHOLOGY.

AT a meeting of the Section of Pathology of the Royal Society of Medicine held at University College Hospital Medical School on March 7th, Professor A. E. BOYCOTT presiding, the first paper, read by Dr. LAZARUS-BARLOW, described further attempts at the experimental production of carcinoma in rats by means of radium. In order to lower the resistance of rats to cancer before subjecting them to radium, they were given a course of treatment by potassium, since it has been found that patients with cancer have more potassium salts circulating in the blood and that rats have been found to be more susceptible to carcinoma after the administration of potassium. Irradiation also was carried out for the purpose of lowering the resistance. During the course of this treatment tubes of radium were introduced into the rats and certain inflammatory lesions followed, which had many resemblances to cancer. Dr. Lazarus-Barlow called attention to four changes which he regarded as possible criteria of malignancy—namely, the presence round the tube of radium of tissues resembling those of a neoplasm; a cystic condition of the lungs, possibly due to metastases; the permeation of the lymphatics between the muscle layers of the stomach by collections of endothelial cells; and endothelial proliferation. One or more of these signs was present in 39 out of 48 rats experimented on, but attempts at propagation of these growths by inoculation were not successful.

In the subsequent discussion, in which many members of the Section took part, some criticism was expressed of these criteria of malignancy, but Dr. Lazarus-Barlow in his reply pointed out that he was only reporting on attempts to produce malignant growths, and did not claim he had already achieved his object, but suggested that the lesions he had produced had many resemblances to malignant growths.

Dr. C. E. DUKES read a paper on adsorption of ferments by bacteria. He described experiments which were designed to ascertain whether it was possible to lower the titre of a solution of trypsin by saturating the ferment with large doses of bacteria. Charts were shown illustrating the fact that animal charcoal and powdered fibrin adsorb ferments, but it was demonstrated that bacteria even in massive quantities have no effect in lowering the ferment titre. No physical change resulting in fixation of the ferment occurred as the result of sensitizing the bacteria with specific agglutinating serum, nor did bacteria rendered digestible by the action of heat or fat solvents show any capacity for adsorbing ferments.

A paper was read by Dr. EMBLETON on work carried out in co-operation with Dr. Teale on the subject of intestinal infection. Tables were shown illustrating the fact that bacteria injected into the stomach are destroyed and do not cause infection. Organisms injected into the intestinal tract were never found at a higher level than the point where introduced. It was shown that the gastric juice is a powerful germicide, killing off bacteria in a few minutes; but if the hydrochloric acid of the stomach is neutralized then bacteria are not killed; 0.3 per cent. HCl behaves in a similar fashion. When bacteria are inoculated intravenously they are found in the blood, mouth, and intestines, but never in the stomach, unless the contents of that organ are alkaline. The conclusions to which the authors have arrived are: (1) That the gastric juice and intestinal mucous membrane are very good barriers against the passage of bacteria into the body; (2) that when bacteria are taken into the mouth they may be absorbed through the buccal and pharyngeal mucous membrane, but the exact point where absorption takes place has not been definitely established; (3) that bacteria introduced into the body by any route are always excreted into the intestinal tract.

A paper was read by Professor BOYCOTT on the restoration of blood volume after haemorrhage and anaesthesia, embodying experiments carried out with the collaboration of Dr. Price Jones. In unanaesthetized animals they showed that even after severe bleeding the blood volume is restored after about three hours, fluids passing back from the tissues into the blood. If, however, the animal was bled when anaesthetized by ether and urethane, then the blood volume was not restored. Attempts were made to induce the restoration of blood volume during anaesthesia by such means as tetanizing and administration of carbon dioxide, but they were not successful. It was shown that with ether alone and urethane alone the same results were obtained, and also with gas and oxygen anaesthesia, but with the latter it was not found possible to anaesthetize laboratory animals in a satisfactory manner, some degree of asphyxia always being produced. Even without bleeding the blood volume is reduced during anaesthesia, and the authors arrived at the conclusion that anaesthetics have the effect of causing a redistribution of fluids in the body, the blood becoming more concentrated and the tissues containing more fluids. Experiments were described in which the blood volume was increased by transfusion and the animal subsequently anaesthetized. The blood volume of such an animal returned to

the original level more rapidly when under an anaesthetic than when not, from which it was concluded that anaesthetics diminish the permeability of the vessels from without inwards.

STERILITY AND THE STATE.

AT a meeting of the Section of Obstetrics and Gynaecology of the Royal Society of Medicine on March 2nd, with Professor HENRY BRIGGS, President, in the chair, Dr. R. A. GIBBONS read a paper on sterility with reference to the State, which is printed in full at p. 427. In the discussion that followed Dr. T. W. EDEN said that he was not prepared to admit that a higher birth rate was necessarily an advantage to the State. He saw no advantage in producing more babies than could be provided for by their parents or employed later in the business of the country. In the war the two countries in Europe with the highest birth rate were now in the sorriest plight of all, while the two nations with the lowest birth rate, France and England, won the war. In reply to Dr. Gibbons's fears that France was on the way to committing "race suicide," he pointed out that before the war she was economically one of the strongest nations in the world, and never had the acute crises of unemployment which occurred in England. The idea that the proposed medical examination before a marriage could be made legal filled him with amazement, and he thought it might have the effect of discouraging marriage.

Dr. AMAND ROUTH agreed almost entirely with Dr. Gibbons that the main cause of the lowered birth rate was voluntary limitation of conception, which he believed led to much harm in both potential parents. It was unnecessary, for this country had to defend its dependencies all over the world, and the need for immigration into those lands was almost illimitable. The diminishing birth rate, due to voluntary limitation, was especially amongst classes which are best able to afford it. Malthus's original plan was the postponement of marriage and abstention for varying periods afterwards if necessary. Neo-malthusianism connoted early marriage, or no marriage, with the use of contraceptives. If limitation was necessary the doctor should decide upon its methods. Dr. Gibbons's proposals to check national sterility could only be adopted if pressure of public opinion demanded it. Health certificates before marriage, again, bristled with difficulties, especially as regards women, and might perhaps be met as an alternative by the life insurance of both partners to a marriage, the medical fee for examination to be paid by the State if need be. Voluntary sterilization of the unfit by vasectomy or salpingectomy could not yet be encouraged by the State, and compulsory sterilization, even of imbeciles under State control, was not yet possible. Confidential death certificates, which were in use in every other European country, would enable more reliable statistics of infantile deaths to be available. Stillbirths should be registered, not merely notified to a medical officer of health as now, and the cause of the deaths should be investigated by experts.

Dr. LAPTHORN SMITH called attention to the overcrowding and bad housing conditions in many of our large cities and towns; an increase of population would make matters worse. There were two million women who could never marry in this country, because there were not enough men. These should go overseas, where they could meet an equal number of unmarried British men.

Dr. ARTHUR GILES said that Dr. Gibbons's paper appeared to him to be very opportune and most suitable for discussion in the Section, because those interested in State medicine did not interest themselves overmuch in questions of sterility: the general practitioner and gynaecologist were chiefly consulted in this matter. If only those who could not afford to bring up children controlled their families little could be said against it; but control was chiefly exercised by people who could well afford the care of children, and this was a real loss to the State. It was necessary to distinguish between what the State could do and what was dependent upon public opinion. The State could certainly take steps for the care of illegitimate children, and could legitimize children whose parents married after their birth. Public opinion, on the other hand, could do a great deal in other directions. A better teaching could be spread abroad showing the drawbacks of restricting childbirth. He doubted whether State regulations requiring a medical certificate before marriage would be practicable, but he thought public opinion might do much in this direction.

Decidual Reaction in an Extrauterine Adenomyoma.

Mr. C. D. LOCHRANE read a communication on a small irregular tumour in the recto-vaginal septum of a pregnant nullipara, which proved on section to be a typical adenomyoma. The cellular mantle surrounding the gland spaces showed a very extensive and complete reproduction of decidua compacta exactly similar to that seen in the uterus during normal pregnancy. The gland epithelium was chiefly of the flattened columnar type, and showed evidences of hyperplasia in places. The patient gave a previous history of painless menstruation without excessive loss, and there was no family or personal history of tubercle or gonorrhoea, but a small fibro-adenomatous polypus hung from the external os uteri. There had been temporary difficulty on defaecation, with melaena, on two occasions before pregnancy began. The specimen, he believed, was unique, as the only other reported extrauterine case showing similar appearances was not definitely circumscribed nor dissociated from the uterus as was the tumour in this case. The Müllerian theory of origin of uterine and extrauterine adenomyomata received the strongest support from the following facts: (1) Though a great number of extrauterine adenomyomata had been reported at various times, these were the only two reported in association with pregnancy, and they had shown an associated decidual reaction in the tumour in 100 per cent. of instances. (2) There was no reported case, unassociated with pregnancy, of decidual reaction in an adenomyoma wherever situated. (3) Of eight uterine cases of adenomyoma in association with pregnancy collected from the literature by Lockyer, all but two showed definite decidual reaction in the connective tissue stroma of the associated tumour, and these two were open to doubt as they did not appear to have been sectioned serially. It was probable that adenomyomata owed their inception to an antecedent inflammatory condition in the tissues of origin.

Mr. T. G. STEVENS considered the specimen a most important one, as it served as a link in the chain of evidence in support of the theory that all adenomyomata were in reality derived from the endometrium. Although a decidual reaction was occasionally seen in tissues not derived from the Müllerian duct, such as the stroma of the broad ligament, such specimens were exceedingly rare, and then only occurred in immediate relationship to a tubal pregnancy which had ruptured between the layers of the broad ligament. On the other hand, any tissue directly derived from the Müllerian duct would be expected to share in the decidual changes which normally occur in the endometrium.

GROWTH OF THE FACE IN MAN.

A JOINT paper on the growth of the human face was read before the British Society for the Study of Orthodontics last December by Sir ARTHUR KEITH and Mr. GEORGE CAMPION and discussed at its meeting on March 6th. Mr. CAMPION contributed a series of measurements showing the vertical and sagittal increase from childhood to full growth. The vertical measurements were made from nasion to submental point, with intermediate measurements, and the sagittal from the transmeatal line to the nasion, upper central incisor, and submental point. The number of individuals measured was thirty. Sir ARTHUR KEITH contributed a detailed comparison of immature with mature skulls, designed to show the areas where growth takes place. The interesting observation was made that in the modern Englishman the nasion moves forward and upward with growth, whereas in primitive native races and in prehistoric English skulls it moves forward or forward and downward. It was demonstrated that concurrently with growth of bone there is absorption and remodelling, as in the cutting back of the base of the anterior nasal orifice, and the absorption of the anterior surface of the malar process of the superior maxilla. Sir Arthur Keith was convinced that the modern British face was becoming longer and narrower. Increase of width was found to be largely dependent on growth at the malo-maxillary and intermaxillary (palatal) sutures. The modern narrow-faced English skull was found to be wanting in growth at both these areas. Special attention was drawn by the authors to growth at the intermaxillary and internasal sutures—a point they believed to have been hitherto overlooked. A comparison of acromegalic with normal skulls showed that the acromegalic face was enlarged by a process of true growth, the growth changes being found in the same areas and being of the same nature as those seen in normal

subjects. The authors thought that the narrow English face with the accompanying adenoid and tonsillar enlargements was the expression of an underlying pathological condition, which might result from a nutritional disturbance—perhaps a deficiency of vitamins in the dietary of youth.

The adjourned discussion brought together a large meeting of the society and visitors, including the president of the Japanese Dental Association. Professor JOHNSON asked whether a standard could be established. In answer to a question by Mr. RUSHTON, Professor KEITH said he thought deflected nasal septum might be due to a failure of forward growth of the face. Mr. J. G. TURNER thought that observations on the growing dental arches showed that growth at the intermaxillary suture was of but limited extent. Much criticism was levelled at the remarks on causation of the "adenoid face," and the PRESIDENT, in summing up the debate, pointed out that the important point was that the authors of the paper had shown where and how to look for the normal factors in the growth of the human face, thus establishing a sound basis for the study of orthodontics.

In reply, Mr. CAMPION said that though the number of measurements was few they were made on individuals with entire dentitions, and Professor KEITH urged that the number of different growth centres showed that there must be a co-ordinating mechanism. He added that he and Mr. Campion regarded the paper as a preliminary study and almost as showing the extent of our ignorance.

DIFFERENTIAL DIAGNOSIS OF THE EXANTHEMATA.

A DISCUSSION took place at the Medical Society of London on March 13th, Mr. JAMES BERRY presiding, on the differential diagnosis of the common exanthemata.

Dr. E. W. GOODALL, in introducing the subject, said that in certain of the communicable exanthemata the diagnosis could often be made on a single symptom—for example, the buccal exanthem of measles; but in others it was a combination of symptoms which was the deciding factor, especially in scarlet fever, enteric fever, and occasionally even in measles. Enteric fever was the only one of these diseases in which the pathologist, represented by the bacteriologist, had come to the assistance of the clinician. In typhus the pathologist had still to establish his claim, and if they were to judge by the confusion introduced into the diagnosis of diphtheria by the discovery of the Klebs-Loeffler bacillus, on account of its ubiquity and protean nature, he confessed he looked forward with no little apprehension to the bacteriologist's success in establishing the cause of scarlet fever. The eruptions of chicken-pox, small-pox, and enteric and typhus fevers were pathognomonic, and were never forged by other affections, or by one another, with such accuracy that the forgery could not be detected. But this was far from being the case with scarlet fever, measles, and rubella, the rashes of which were not pathognomonic. The rash of scarlet fever was an erythema, more or less punctate, evenly spread over the trunk and limbs, but avoiding face, forehead, scalp, palms, and soles. Similar rashes might occur as the second stage of rubella or measles, as the prodromal rash of measles and chicken-pox, as the result of an enema or a drug, and in the disease known as recurrent scarlatiniform erythema. Rubella was the most difficult condition to distinguish from scarlet fever. He had known, in measles, a diagnosis of scarlet fever to be superimposed because the discrete, macular erythema of measles had become merged into a confluent, punctate erythema, an event by no means unusual. He had known also a scarlatiniform rash which had been produced by quinine and belladonna to be mistaken for scarlet fever. In nearly 600 instances of serum rashes occurring at the North-Western Hospital, the rash could only be described as scarlatiniform in 7 cases, and in 6 of these it was strictly limited to the skin around the site of injection. Great importance seemed to be attached to peeling as evidence of an attack of scarlet fever, but for his own part he declined to admit that a case was scarlet fever unless there was satisfactory evidence that peeling had been preceded by an illness of which sore throat and rash at least had been symptoms. Any erythema or dermatitis might be followed by peeling which was quite indistinguishable from that of scarlet fever. Pinhole desquamation, held by some to be characteristic of scarlet fever, might occur after measles, rubella, urticaria, serum rashes, and other febrile erythemas. There was no single symptom which was characteristic of scarlet fever; the diagnosis must be made on the combination and sequence of signs and symptoms. Morbilliform eruptions did not give so much trouble as scarlatiniform. Fortunately in measles, if seen early, the buccal exanthem known as Koplik's spots was a pathognomonic sign. In measles also there was usually a febrile period with catarrhal symptoms for three or four days before the rash. Serum rashes were frequently morbilliform; but while with these there might be a good deal of constitutional disturbance, there were none of the signs of measles beyond the rash and pyrexia. The differentiation between small-pox and chicken-pox must depend upon the distribution of the lesions and their individual character. The eruption of small-pox affected the face and scalp, the distal parts of the extremities rather than the proximal, and the back of the trunk more than the front. As for enteric and typhus fevers, in his experience the most valuable clinical sign in these diseases was the eruption, which in each disease was pathognomonic. Dr. Goodall concluded by showing epidiascope illustrations of the various conditions.

Dr. W. McC. WANKLYN spoke on the diagnosis of small-pox, which he said had a national as well as a clinical and professional interest, because this country, unlike every other in Europe, elected to keep the dreaded scourge at bay not so much by protecting all the inhabitants by vaccination as by reliance upon the instant recognition of small-pox as soon as it appeared. Four-fifths of the population of England and Wales were liable to take small-pox if freely exposed; only eight out of thirty-six millions of people were protected by vaccination. The late Dr. Ricketts placed the diagnosis of small-pox upon a scientific basis by his demonstration of the rash distribution, making it a simple matter, in the great majority of cases, to differentiate between chicken-pox and small-pox. Dr. Ricketts had pointed out that the rash of small-pox favoured the areas of skin which were specially liable to irritation, such as the hands and face, the extensor rather than the flexor surfaces, and so on. Looking back over something like 15,000 cases of small-pox and suspected small-pox, the speaker was able emphatically to bear out Dr. Ricketts's contention. In very many cases complete certainty in diagnosis could be arrived at by the simple plan of counting the spots and seeing whether they fell in with the usual distribution of the rash of small-pox or of chicken-pox. The rash of chicken-pox was centripetal, that of small-pox was centrifugal. The method of making an actual count of the spots in mild cases and of plotting them on a diagram form was used with much success in a recent outbreak in the North of England. Dr. Butterworth's report on the outbreak in Lancashire showed that the prompt diagnosis of cases, aided by this means, was one of the factors which operated in speedily bringing it to an end.

Dr. A. F. CAMERON remarked that scarlet fever was one of the most difficult of infectious diseases to diagnose, and small-pox one of the easiest. In small-pox the most constant and least variable sign was the rash distribution. This had the advantage of being a sign which in no way depended on the patient's testimony or the previous history of the case. Small-pox was capable of producing three kinds of eruption: an erythema, a purpura, and a focal lesion, essentially a vesicle. He could not remember seeing an erythema in small-pox which resembled the rash of scarlet fever or measles in any particular except its colour. He believed that the haemorrhagic small-pox was only an exaggeration of the inherent purpuric tendency of the disease.

Sir JOHN BROADBENT said that it was by no means easy to distinguish a mild case of scarlet fever from a case of rubella, or a severe case of rubella from scarlet fever. It was important to examine the whole body and note the distribution of the rash. The throat in scarlet fever would generally show a little more congestion than in rubella, and the tongue was characteristic as a rule, though it must be admitted that there were cases in which it was almost impossible to make a certain diagnosis as between the two conditions. Another perplexing problem was the scarlatiniform rash in diphtheria. One must not trust that this was a serum rash; the patient should be isolated instantly.

Dr. C. R. BOX did not agree with Dr. Goodall that the rash of scarlet fever never appeared on the palms and soles, although it was certainly rare in these positions. If attention were paid to glandular enlargement a clue might be obtained to the differentiation between scarlet fever and rubella. Serum rashes might be scarlatiniform, but if the patient were examined thoroughly it would generally be found that the

rash was not uniform and that there was marginal erythema or some sort of discrepancy which would enable one to attribute the rash to the proper source. He did not believe in influenzal rashes; all cases of so-called influenzal rash which he had seen proved to be undoubtedly something else.

Dr. FREDERIC THOMSON said that in the small-pox epidemic of 1901–2 fully 50 per cent. of the mistakes in diagnosis were due to a confusion between small-pox and chicken pox. In the course of that epidemic Dr. Ricketts said to him that he would be prepared to make a diagnosis between the two conditions over the telephone if there was a good observer at the other end to describe the distribution of the rash. The differentiation of scarlet fever from rubella was often difficult, sometimes impossible. The glands were not always enlarged in rubella. The only help that he had found was the colour of the eruption; rubella very seldom lost its pinkish tinge, which was practically never found in scarlet fever.

Sir J. DUNDAS GRANT raised the question of post-operative scarlet fever, and whether the rash seen after operation was due to drugs. Some people had a rash of an erythematous kind after potassium bromide, quite apart from the ordinary bromide rash. Dr. W. STOCKER said that vomiting was one of the greatest diagnostic points in scarlet fever, differentiating it from measles and rubella. The glands in the neck, which were nearly always tender and enlarged in rubella, were a valuable sign in that condition. Dr. J. H. STOWERS said that for a number of years he had observed—not an original observation—that the vesicles of varicella were very frequently ovoid rather than oval, and with their long axes always across the axis of the body. It was important to study drug eruptions, which were extremely common; he believed there were 150 of them.

Dr. GOODALL, owing to the lateness of the hour, was unable to make a detailed reply. He could only say that in his belief surgical scarlet fever was scarlet fever pure and simple. Rashes after operation were not generally scarlatiniform.

REPAIR OF BONE INJURIES.

A MEETING of the Sheffield Medico-Chirurgical Society was held on February 16th at the University, Sheffield, with the President, Dr. GODFREY CARTER, in the chair. Mr. E. W. HEY GROVES read a paper on "The repair of bone injuries," and referred to his experiments with metal plates on fractures in animals, which showed that the presence of metal was not prejudicial to new bone formation. It was to the methods of dealing with gaps in bone and the principles involved in filling them that Mr. Hey Groves mainly directed the remarks of his paper. He pointed out that powdered bone put between a gap was not useful, and that comminuted bone was satisfactory provided there was no interference with its blood supply. The use of a dead graft was almost as good as a living one. The importance of firm fixation of grafts was emphasized and of wide contact between the bone of the host and of the graft as being factors which promote and stimulate osteogenesis. The paper was beautifully illustrated with lantern slides, showing some of the methods used by the lecturer. In the discussion which followed, Professor CONNELL, Mr. GRAHAM SIMPSON, Mr. FINCH, Mr. GARRICK WILSON, Mr. COUPLAND, and others took part.

AT the annual dinner of the Odonto-Chirurgical Society, held at Edinburgh, Mr. A. E. Millar, in proposing the toast of "The Royal College of Surgeons of Edinburgh," suggested that the creation of a fellowship in dental surgery would be an incentive to those who had time to spend in dental research. Mr. George Mackay, F.R.C.S.E., in reply, said that diplomas were multiplying in all directions, and there was a tendency to too much specialism; it did not do to allow men to get into too narrow grooves. Mr. A. Miles, F.R.C.S.E., in proposing "The Edinburgh Dental Hospital and School," said that the dental profession was in a transitional period. The passing of the Dental Act last year meant that the college and school would have certain additional duties. Whatever its features the Act was on the Statute Book, and it was for the college and school to carry it out to the best of its ability. Edinburgh was fortunate in being well represented on the Dental Board.

THE Society for the Advancement of Clinical Study in New York announces that the principal hospitals of New York are joining in a plan to provide daily medical clinics open to all members of the medical profession. Dates will be arranged so that at each hospital at least one clinic will be held daily, and subjects of importance will be covered at regular intervals.

Reviews.

THE SURGERY OF PERIPHERAL NERVE INJURIES.

IN *The Surgery of the Peripheral Nerve Injuries of Warfare*[1] Mr. HARRY PLATT has given an admirable summary of the subject, and almost the whole of the views expressed would be endorsed by those who have had much experience of the injuries of peripheral nerves resulting from gunshot wounds. His personal experience embraces some 500 operations for such injuries, and the value of his conclusions is greatly enhanced by the fact that the clinical and pathological aspects have been worked out in collaboration with Professor Stopford and others. These conclusions will be found to harmonize in all essential respects with those of other workers in the same field.

Anatomical and physiological considerations receive due emphasis, and the practical methods of clinical examination which have crystallized from the more elaborate and detailed methods of research are well summarized.

Mr. Platt's classification of the gross injuries which may be found as the result of gunshot wounds is perhaps too elaborate, and is of little practical use, since it rests upon an anatomical rather than upon a physiological or functional basis. The same criticism is applicable to the well-known grouping of Benisty, which he quotes.

In regard to the repair of divided nerves, Mr. Platt emphasizes the fact, now generally recognized, that the only method which offers any prospect of restoration of function is direct end-to-end suture; and the various manœuvres for overcoming the difficulties presented by a wide gap are discussed. His experience of nerve grafts coincides with that of most other surgeons. There is no doubt that a few meagre fibrils can sometimes be found in an excised graft, and it is equally beyond doubt that close examination has sometimes revealed evidence of conduction through a graft; but no unequivocal facts have yet been adduced to prove that useful function can be restored by nerve grafting.

Mr. Platt's analysis of results deserves very careful attention. He has tabulated those of end-to-end suture in 150 cases in as fair a manner as possible, since he specifies the nature and, to some extent, the degree of the recovery. He does not, however, give the criteria by which recovery of the muscles was judged, whether by the standard of function or merely that of electrical tests. It is noteworthy that in 77 cases in which either the median or the ulnar nerve was sutured recovery in the muscles of the hand was observed in only 23 instances.

With regard to sensory recovery Mr. Platt's experience fully justifies the pessimistic view to which other surgeons have been driven—namely, that "in very few cases has there been more than a slight recession of analgesia or incomplete restoration of protopathic sensibility." His general conclusion is that "in the whole series (of 150 end-to-end sutures) there are no examples of absolutely complete and perfect recovery, excepting possibly in five of the musculo-spiral and two of the external popliteal sutures."

It is perhaps a little surprising that so few cases of causalgia are included in the series, and that Mr. Platt should not have encountered a single instance of the severe type of case in which no surgical procedure, not even section of the posterior roots, gives any relief. The only serious criticism which must be made in this connexion concerns the preference expressed for resection and suture as against the "equally or even more destructive method of alcohol injection." Alcohol injection cannot be more destructive than resection, and may be much less so. If properly controlled, pain may be abolished without causing total loss of conduction, and even if such total loss is occasioned recovery is much more rapid and satisfactory, since the anatomical continuity of the nerve has been less disturbed.

The book contains a large amount of information in a small compass; it is well arranged and clearly written, and deserves careful perusal by all who are interested in the subject.

PERCY SARGENT.

[1] *The Surgery of the Peripheral Nerve Injuries of Warfare.* Being the Hunterian Lectures delivered before the Royal College of Surgeons of England on February 7th and 9th, 1921, by H. Platt, M.S. Lond., F.R.C.S. Eng. Bristol: J. Wright and Sons, Ltd.; London: Simpkin, Marshall, Hamilton, Kent, and Co., Ltd. 1921. (Cr. 4to, pp. 49; 12 figures. 4s. net.)

THE WASSERMANN TEST.

As Colonel CRAIG is an acknowledged authority on the technique of the Wassermann reaction the appearance of the second edition of his book[2] on this subject was to be expected. While it corresponds in plan and matter to the first edition care has been taken to add any new or recently observed facts. It is thus thoroughly up to date.

Venereal diseases and the problems, both social and scientific, which they present are at the moment receiving considerable attention. This work will serve those interested in the subject well, since it expresses in a manner both lucid and thorough the latest information on a large part of the various aspects of syphilis. But it does more than this: it embodies some things not generally known, such as that the strength of the Wassermann reaction undergoes marked daily variations. This observation must have considerable point when a comparison between the technique of different workers is being made, or when a series of observations are being carried out on the same individual. Again, the author advises that if a human blood cell suspension is employed, only blood from Group IV should be used.

While the subject matter will appeal especially to pathologists, there is also much useful clinical information. Colonel Craig's position as a leading authority on the subject adds to the value of his statements, for the reader is assured that only carefully tested facts have been recorded. The book is a most valuable contribution to an important subject.

HYPERPIESIA.

SIR CLIFFORD ALLBUTT defined hyperpiesia as a malady in which at or towards middle life the blood pressure rises excessively—a malady having a course of its own, and deserving the name of a disease, but without any organic associations other than cardiac hypertrophy and altered blood vessels, the raised blood pressure or hyperpiesis being a sign of the disease hyperpiesia. It is therefore most appropriate that Dr. BATTY SHAW should dedicate to him this careful clinical, pathological, and experimental study of *Hyperpiesia and Hyperpiesis (Hypertension)*,[3] which is obviously the result of years of thoughtful work, and indeed embodies ideas incidentally introduced into some of his previously published papers. The basis of this finely got up volume is the record of fifty cases of hyperpiesis clinically and pathologically investigated at University College Hospital, the clinical diagnosis depending on a systolic blood pressure, taken on the upper arm in the recumbent position, of 150 mm. Hg or more. But three of these cases did not show cardiac hypertrophy at the necropsy, and are therefore excluded from the detailed analysis, the high blood pressure being due to intracranial haemorrhage in two instances, and to excitement in the third. Three-quarters of the patients were males, but as boys and young adults may be affected laborious occupations can be held to be not responsible. The largest number of deaths occurred between 40 and 49 years of age, and the view that hyperpiesis is a function of age is erroneous, for the blood pressure of vigorous old men may be constantly below 150 mm. The most frequent symptoms were cardiac, such as dyspnoea on exertion, dropsy, and palpitation; almost as common were renal manifestations, and it is noteworthy that granular kidney was found after death in about half of the cases; nervous symptoms came next, and then those referable to the gastro-intestinal tract. The clinical analysis is followed by some histological remarks, illustrated by a number of figures, on renal atrophy by Mr. T. W. P. Lawrence, and then the microscopic changes in the 47 cases are considered in two groups: in 26 cases a kidney was injected with a preservative fluid as soon after death as possible, whereas in the remaining 21 cases this was not done; as degenerative changes in the renal tubules were found in 80 per cent. of the second group as compared with a 60 per cent. incidence in the first group, the question arises whether this difference was due to *post-mortem* autolysis. The causation of the raised blood pressure is discussed at length, and the view that it is due to widespread obliteration of the small blood vessels is controverted; the influence of some pressor substance or substances is tentatively accepted. On this subject Dr. Batty Shaw has carried out some experimental injections of tissue extracts into animals on the lines adopted by Swale Vincent and Sheen and by Tigerstedt and Bergman; it appears that a pressor substance—rennin—is present in the normal kidney, especially in the cortex, and it is suggested that in cases with definite changes in the kidneys the hyperpiesia may be due to nephraemia or to the entrance of rennin into the circulation. But in cases with unaffected kidneys pressor substances from sources other than the kidneys, such as the intestinal tract, must be considered. It is indeed admitted that all cases of hyperpiesia may be due to toxins of extrarenal origin and that changes in the kidneys may be caused by their influence. The possibility of anaphylaxis in this connexion is cautiously raised, and the resemblance of the hypopietic crises—characterized by a sudden fall of blood pressure, convulsions, and even collapse—to histamine shock is pointed out; formerly ascribed to metabolites retained as the result of renal inadequacy, these attacks may, it is suggested, be due to histamine-like bodies derived from cells deprived of their blood supply, and be analogous to protein shock. This careful clinical and pathological investigation will appeal to others engaged on similar problems.

PHYSIO-THERAPEUTICS.

THE effects of the experiences of the last seven years on the practice of surgery and medicine have been great and manifold. We are reminded by the appearance of the second edition of Dr. T. D. LUKE'S *Manual of Physio-Therapeutics*[4] that that department of treatment has benefited as much, probably, as any other. The great number of men whose physical apparatus has been damaged, and of whom many at the same time have experienced disturbances of their psychical endowments, has offered a great field of work for massage, muscular training, electro-therapeutics, hydropathy, and the like.

In all medicine when we attempt to study the effects of treatment we are met by the difficulty of distinguishing between the actual physical results of a remedy or the actual physical changes produced, and the results suggested to the patient by the physician and his assistants, which are often duly experienced by him, without perhaps any physical change having taken place. In no department of medicine and surgery is this difficulty more obvious than in that treated in the work now under notice.

But although this may be annoying to the scientific investigator it is of little moment to the patient, who does not care how he is cured so long as he feels that he is. As the anonymous writer who is quoted on the title-page says, "Most folks like being healed by magic." Without attempting to estimate how much magic and how much physics there may be in physio-therapeutics, we can recommend Dr. Luke's book to all who wish to obtain an insight into the many methods of treatment which are so largely employed at spas and hydropathic establishments. The book is not one on war injuries, and thus very little is said about the orthopaedic treatment of war disabilities. The section on thermotherapy is particularly good, and hydrotherapy, massage, and medical gymnastics are adequately discussed. The author is moderate in his claims for massage, and his remarks on the effect of exercise on the heart and on the metabolism of the body are sound. We must confess, however, that we have found it as difficult to estimate the difference between one professor's set of physical jerks and another's as it notoriously was to tell the difference between Tweedledum and Tweedledee. The movements taught by Jones-Brown seem to us of about equal merit to those of Smith-Robinson, or any professor with a Teutonic surname.

Dr. Luke includes a wide range of methods of treatment in physio-therapeutics, including sea voyages, the open-air treatment of consumption, climate, electro-therapeutics, and diet, to which last subject a whole section is devoted.

We venture to doubt the accuracy of his statement that the Chinese and Japanese are strict vegetarians. We believe it is a fact that flesh and fish enter into the diet of these peoples whenever they are able to obtain them. The chapters on the dietetic treatment of obesity, diabetes, and rheumatism are likely to be useful to the practitioner.

We have failed to find any reference to the sun-rays treatment of surgical tuberculosis by the brothers Rollier, which

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[2] *The Wassermann Test.* By C. F. Craig, M.D., M.A., F.A.C.S. Second edition, revised and enlarged. London: H. Kimpton. 1921. (Med. 8vo, pp. 279; 3 p'ates. 25s. net.)

[3] *Hyperpiesia and Hyperpiesis (Hypertension): A Clinical, Pathological, and Experimental Study.* By H. Batty Shaw, M.D., F.R.C.P., Physician to University College Hospital. Oxford Medical Publications. London: Henry Frowde, and Hodder and Stoughton. 1922. (Cr. 4to, pp. 191; 11 figures, one coloured, 53 charts. 21s.)

[4] *Manual of Physio-Therapeutics.* By Thomas Davey Luke, M.D., F.R.C.S.Ed., etc. London: William Heinemann, Ltd. New and revised edition. 1922. (Demy 8vo, pp. xvi + 480; 210 figures. 25s. net.)

is carried on at Leysin, or any mention of the melted hard paraffin baths which have proved useful in the military orthopaedic hospitals.

The book is printed in clear type on good paper, is well illustrated, and has an adequate index.

COLLOIDS.

HATSCHEK'S *Introduction to the Physics and Chemistry of Colloids*[5] is a textbook dealing with the scientific knowledge of the subject acquired down to the present time. Many of the facts depending on colloidal properties are among the most familiar of everyday life, yet of the subjects of common experience few received so little scientific attention as these for long after the foundation for their study had been laid by Thomas Graham more than fifty years ago.

The reason for past delay in the pursuit of investigation in the phenomena of colloids was apparently that the suggestion which leads to experiment was then lacking through the want of subsidiary information relating to the causes concerned. With the growth of science in other branches of molecular physics came the needful suggestions, and more recently direct appeals to experiment have been frequent and fruitful of results. The information derived from experimental work has, however, been rather inaccessible to the reader who could not devote time to the study of original memoirs or work out for himself the inferences deducible from different workers' achievements.

That defect is now repaired in the admirable little volume under review. It treats the subject in the easy manner that captivates interest; it describes the qualities of colloidal matters and their behaviour under experiment with quite vivid effect, enabling the reader easily to visualize the experiment even if a stranger to the materials concerned; the explanations of theory are equally lucid. The brevity of expression with which this is accomplished adds to the meed of praise which is the author's due. A great and varied range of facts are treated, and nothing of especial or even ordinary interest appears to have been omitted; the discussions of fact and theory are rendered in such order as best to facilitate a grasp of the whole subject and to give connected ideas of related phenomena. Throughout the text proper recognition is paid to those who have done the scientific work, and references to original publications are sufficiently numerous to meet the needs even of the specialist reader.

No one who is interested in the study of colloids owing to their importance in biology and industry or other relations should neglect to become acquainted with the contents of this book. It should be no less appreciated by elderly students than by their juniors, and among the latter there should be many to whom it will prove a strong incentive to research.

AGRICULTURAL AND INDUSTRIAL BACTERIOLOGY.

THE activities of bacteria are being studied by agriculturists, dairy farmers, and manufacturing chemists with as much enthusiasm as has been shown by medical bacteriologists since the days of Pasteur. Professor R. E. BUCHANAN'S book on *Agricultural and Industrial Bacteriology*[6] discusses the science of bacteriology from the industrial point of view. The medical bacteriologist frequently encounters organisms used in industrial processes, and from the public health point of view the medical man should have some acquaintance with the bacteriological questions involved in dairy work, and in the baking, bottling, and canning of food.

Professor Buchanan's book is not a manual of laboratory practice so much as an exposition of the bacteriological topics of fundamental importance in everyday life on the farm and in the industries. The first section is devoted to a classification of bacteria, yeasts, and moulds. The second section deals with methods of study, and contains a useful chapter giving tests for the determination of microbial activity. The physiology of bacterial processes forms the subject matter of the third section, and in it the chemistry and physics of these reactions are discussed in the light of present-day knowledge. The fourth section deals with such practical questions as the preservation of food, alcoholic fermentation, bread making, the manufacture of cheese, vinegar, and citric acid, and the fermentation of starch. Considerable space is devoted to soil bacteriology and the nitrogen cycle, a subject of vast importance to agriculturists. When the author comes to the question of micro-organisms and disease he is not quite so much in his element: the short description he gives of pathogenic organisms is insufficient for the recognition of species, and the illustrations of bacteria surrounded by flagellae might lead the novice to imagine that such morphological appearances are of value in identification. The last section of the book gives a clear exposition of the bacteriology of water, sewage, and milk.

The nomenclature adopted is slightly different from that followed in most English books. For instance, the author describes the Gram-negative cocci under the name of Neisseria, the fluorescent bacilli under the name of Pseudomonas, and all the anaerobes under the title Clostridium. Apart from the nomenclature the classification adopted is very involved, and it would take almost as long to place an organism in the particular group to which the author wishes it to be assigned as it would to identify it. In the opinion of most bacteriologists it is unwise to attempt too strict a classification in the present state of our knowledge of bacterial species. What is chiefly required is accurate description and ease of identification. There can be no question, however, that the information with which this book is so closely packed will be received with gratitude by those who, either for practical or theoretical reasons, are interested in the manifold activities of our bacterial enemies and friends.

[5] *An Introduction to the Physics and Chemistry of Colloids.* By E. Hatschek. Fourth edition, entirely rewritten and enlarged. London: J. and A. Churchill. 1922. (Cr. 8vo, pp. xiii + 165; 20 figures. 7s. 6d. net.)

[6] *Agricultural and Industrial Bacteriology.* By R. E. Buchanan. New York and London: D. Appleton and Co. 1921. (Post 8vo, pp. xviii + 468; 67 figures. 15s. net.)

NOTES ON BOOKS.

STARTING from the thesis that tuberculin contains a curative principle, the action of which is masked and generally rendered impotent by undesirable protein impurities evolved in its production, Professor GABRILOVITCH of Finland, in a monograph written in French,[7] sets out to convince the reader that he has discovered a tuberculin of considerable efficacy in the treatment of tuberculosis. This tuberculin is referred to as T.P.G.—"tuberculine pure Gabrilovitch"—and has been deprived of the protein impurities which, according to the author, produce the general and the toxic phenomena. How this purification is obtained is apparently a secret which he prefers to keep to himself. It is true that he mentions the fact that he has solved the difficult problem by laborious investigations (the phrase is familiar) and by the use of "appropriate" reagents, such as "xylol, ether, chloroform, caustic soda, hydrogen peroxide, etc.," but such a statement conveys little information. For a hundred pages he tells us over and over again the various beneficial effects that follow the use of T.P.G., citing names of professors and doctors in various countries (alas! there is not a solitary one from this sea-girt isle) who have found in T.P.G. a boon and a blessing to man. But we are afraid that those who look for a sign will not be convinced.

The second edition of Dr. LYLE'S *Manual of Physiology*[8] has been brought up to date and extended. The author has had the co-operation of Dr. DE SOUZA throughout. The book is quite a good example of a short manual of the subject, concise and well arranged. The authors have succeeded in giving a good general review, without unduly stressing any particular phase. The facts presented have, on the whole, been well selected, and, considering the size of the volume, there are but few omissions of any great importance. In view of the number of references in current medical literature to hydrogen ion concentration a somewhat fuller explanation might have been included with advantage. The authors throughout have managed to present the physiological data with their medical or clinical bearings. It is too often forgotten that the majority of students attending classes in physiology are going to be, not specialists, but practitioners of medicine. The book contains 3 plates and 139 figures in the text.

[7] *Recherches sur le "Principe Curateur" contenu dans la Tuberculine.* By Professor J. Gabrilovitch. Preface by Professor Gabriel Petit of Alfort. Paris: Masson et Cie. 1922. (Cr. 8vo, pp. xiv + 112. Fr. 5 net.)

[8] *Manual of Physiology for Students and Practitioners.* By H. Willoughby Lyle, M.D., B.S., F.R.C.S., and D. de Souza, M.D., D.Sc., F.R.C.P. Second edition. London: H. Frowde, and Hodder and Stoughton. 1921. (Cr. 8vo, pp. 837; 139 figures, 3 plates. 21s. net.)

Dr. WALTER P. BOWERS, secretary of the Massachusetts Board of Legislation in Medicine, has been appointed editor of the *Boston Medical and Surgical Journal*.

MEDICAL AND SURGICAL APPLIANCES.

A Combined Anaesthetic Apparatus.

DR. FRANCIS E. SHIPWAY (London, W.) sends an account of a combination based upon the apparatus for administering warm anaesthetic vapours. It consists of five principal parts mounted on a wooden base—namely, an ether bottle (E), a Dudley Buxton's chloroform bottle (C), a mercury safety valve (S), a sight-feed mixing chamber (M), and a thermos flask of quart capacity for warming the issuing vapour. The ether and chloroform bottles stand in metal jackets partly filled with warm water in order to prevent excessive cooling of the anaesthetic. A regulating tap (T) directs the flow of air or gas, either straight to the patient, or through the anaesthetic in any desired proportion; it passes then to a double metal tube (D) immersed in the hot water of the thermos flask. A tap (F) is provided for replenishing the ether supply during intratracheal insufflation (Dr. Shipway expresses his indebtedness to Dr. Stanley Rowbotham for permission to use this excellent device). When the apparatus is to be used for the insufflation of ether or nitrous oxide-oxygen-ether, or the inhalation of nitrous oxide-oxygen-ether, the chloroform bottle should be detached, and the efferent limb of (T) joined direct to (D). For intratracheal insufflation of ether, a foot-bellows or motor pump is connected to the efferent limb of (T). By opening the tap (F), the pressure is reduced when desired. For the inhalation or insufflation of nitrous oxide-oxygen-ether the tubes of the mixing chamber, which are marked N_2O and O_2, are attached to the nozzles of their respective cylinders, which are three in number—namely, two N_2O cylinders of 50 or 100 gallons capacity, and one O_2 cylinder of corresponding size; they are placed vertically in a three-ringed holder screwed to an upright rod; the lower end of this upright is fixed to a wooden base, and the upper end carries a metal plate, which supports the combined apparatus at a convenient height from the ground. A spirit lamp is used to keep the nitrous oxide valve warm; this ensures a steady flow of the gas. In all cases the vapour is administered warm. A further advantage is that induction can be carried out with nitrous oxide-oxygen-ether, the intratracheal catheter passed, and anaesthesia continued if desired by the insufflation of these gases. The apparatus has been made by Messrs. Mayer and Phelps, New Cavendish Street, W.

BISMUTH IN THE TREATMENT OF SYPHILIS.

NUMEROUS attempts have been made, and no doubt others will be made in the future, to obtain chemical substances which are improvements on, or substitutes for, the arsenical compounds introduced by Ehrlich in the treatment of syphilis. Apart from the efficacy of the drug, which is of course the first consideration, simplicity of preparation, stability of the substance, facility of administration, and absence of toxic effects are the chief desiderata. Recently attention has been directed to the promise offered by the use of salts of bismuth.

Sazerac and Levaditi[1] recount their essays with various bismuth preparations employed in the treatment of experimentally produced spirochaetal lesions of rabbits. The animals were infected with two races of *Spirochaeta pallida*, one derived from a syphilitic chancre and the other obtained from the blood of a general paralytic, and with a spirochaete of a different order—*Spirochaeta cuniculi*, which is the organism found in the spontaneous spirochaetosis of rabbits. Of the various bismuth salts tried (bismuth citrate, lactate, subgallate, oxyiodogallate, and other linkages) the one found to be best supported and to give the speediest results was the tartrobismuthate of potassium or sodium. This salt, containing approximately 50 per cent. of bismuth, was prepared according to the method given by Cowly,[2] and it was found to be well supported by the rabbit to the extent of 50 to 60 mg. per kilo of body weight when administered subcutaneously or intramuscularly. Intravenously the salt was much more toxic, as less than a tenth of that dose was fatal to the animal. A suspension of the drug in olive oil, sterilizable in the autoclave without decomposition, was found to be less toxic than an aqueous solution. When this was injected subcutaneously or intramuscularly into infected animals the spirochaetes disappeared from the lesion on the second or third day, and rapid cicatrization followed. Administration by the mouth or rectum gave poor results. Applying the results to the therapy of human syphilis the authors soon discarded the use of aqueous solutions, as they caused pain and local reactions. The same salt, however, in oily suspension was much better tolerated when given intramuscularly, and though the action may perhaps have been slower they believe it to be more constant, more profound, and more lasting. As the result of the treatment of a few cases in various stages of syphilis, Sazerac and Levaditi state that there is a rapid disappearance of spirochaetes from the open lesions, and a cicatrization of these lesions in a few days. The tartrobismuthate acts on the primary and secondary adenopathies and favourably influences the tertiary lesions. In none of the cases treated was there any sign of relapse after some seven months of observation. The treatment had the minor drawbacks of producing a slight dark line on the gums comparable to the blue line in plumbism, and of inducing sometimes a stomatitis which easily yielded to local treatment.

The time has been too short and the cases too few to permit of a definite conclusion being drawn regarding the permanence of the cure, but the authors believe that in bismuth we have a spirillicide of remarkable potency, comparable to that of the best antisyphilitic medicaments known. It seems to act better and more profoundly than mercury, though in some cases less rapidly than the most active arsenical derivatives. The stability *in vitro* of the bismuth salts used is certainly a notable advantage from the point of view of therapeutic practice. Sazerac and Levaditi are now engaged in the preparation and testing of more complicated bismuth derivatives.

Meanwhile Fournier and Guénot have made a more extensive study of the effects of the bismuth treatment in human syphilis, clinically and serologically, endeavouring to define the dose and to appraise the possible disadvantages as well as the benefits of the drug. Having treated about 200 cases, they state that the results the treatment has given in their hands absolutely confirm those of Sazerac and Levaditi, and show that bismuth deserves to be considered as one of the most powerful antisyphilitic agents at our disposal. The effect of the tartrobismuthate on the primary lesion is to cause a disappearance of the spirochaetes from the surface of the chancre, sometimes on the day after the first injection, more usually on the second day, and rarely after the third day. Small erosive chancres cicatrize completely in a few days, medium-sized chancres take a week to a fortnight, and very large or ulcerating chancres heal entirely in about three weeks, though they lose their specific characters at an early period. The chancrous induration and the accompanying adenopathy are more rapidly influenced by the bismuth than by any other treatment whatever, and generally have completely disappeared in a few weeks. Spirochaetes have been sought in vain in the glands after the third injection—that is, about a week from the commencement of treatment. The clinicians report that in all the primary cases they treated the results were uniformly good, from both the clinical and serological points of view.

In cases where treatment was not begun until the secondary manifestations were evident no less striking results were obtained. The spirochaetes disappeared from mucous plaques after the first or the second injection, and these lesions might heal completely in four or five days. The erosive genital plaques healed almost as rapidly. If caught at its commencement the roseola was arrested, perhaps after an exacerbation of twenty-four hours. The Herxheimer reaction might be apparent also at the site of the papular syphilides. The simple roseola was generally effaced entirely in five to ten days, though the papules endured a little longer. Indeed, the authors have seen the total disappearance in fifteen days of a generalized miliary eruption and of palmar syphilides—manifestations which are notoriously rebellious to specific treatment. The general secondary phenomena, such as headache, lumbago, and pains in the bones, always disappeared with the first injections. In particular they draw attention to eight cases which, in spite of prolonged arsenical and mercurial treatment, were subject to recurrent lesions, and which were permanently cured by bismuth; and to another case of acute syphilitic meningitis where all the symptoms—headache, rigidity of the neck, and Kernig's sign—disappeared after three or four injections, whilst the lymphocyte count of the cerebro-spinal fluid fell from 400 to 7 on the fifteenth day.

With regard to tertiary lesions, Fournier and Guénot report that most usually the bismuth treatment acted in a remarkably rapid fashion in those forms commonly met with, such as gumma, osteo-periostitis, and ulcerated cutaneous sores; lingual leucoplakia was improved though not cured; and the time has been too short to enable a judgement to be formed on the results of treatment of cases of visceral and nervous syphilis.

In brief, as far as the authors have gone, they have not yet encountered any case which presented new lesions after the commencement of treatment; no chancre treated before the appearance of roseola, even if it had been in existence for over a month, was followed by secondary lesions.

The Wassermann reaction has been the guide for the duration of the treatment; in primary and secondary cases

one course of treatment is not usually sufficient to bring about a negative serological reaction. The tartrobismuthate (10 per cent. in olive oil) is administered intramuscularly twice or three times a week, beginning with a quantity corresponding to a dose of 20 cg., which is repeated once or twice and then followed by a dose of 30 cg., so that a first course of treatment taking a month means the injection of a total of 2 to 3 grams of the salt. After this has been completed a single weekly injection of 20 to 30 cg. may be given, or the treatment may be suspended for a month and then started over again. All the time the condition of the Wassermann reaction is noted, and when this becomes negative a few more injections may be given as a precautionary measure.

No serious phenomena have resulted from the use of bismuth, but there are two inconveniences on which Fournier and Guénot dwell. The first of these is the local reaction. Though well borne by most patients, yet in some instances the injections provoked sharp pains at the site which might last for two or three days, sometimes accompanied by local redness and swelling and in exceptional cases by local oily collections, which were spontaneously and rapidly absorbed. These occurrences were practically confined to patients who had walked shortly after being given an injection. The other drawback noted was the almost constant impregnation of the buccal mucous membrane with bismuth. This was manifest by the appearance of a dark line on the gums, sometimes by black patches on the inside of the cheeks and a slight bluish tint of the tongue; in certain cases a mild stomatitis appeared, easily prevented and easily curable. Chemical examinations showed the presence of bismuth in the blood, cerebro-spinal fluid, bile, sweat, saliva, faeces, and urine. It is found in the urine in eighteen to twenty-four hours after the first injection, and persists for twenty to thirty days after treatment is suspended. If the urine is examined in a vessel a black deposit of bismuth will be found on the sides, due to the fermentation of the urine.

In the same number of the *Annales* Marie and Fourcade report a trial of tartrobismuthate on twenty cases of nervous syphilis. Not much can be expected from the treatment of such conditions, but sensible improvement resulted in a few cases where the lesion was localized and not diffuse.

The experimental and clinical records of this bismuth treatment show a welcome degree of restraint that should serve as a model to those who may follow up the observations.

REFERENCES.

[1] Sazerac and Levaditi, *Annales de l'Institut Pasteur*, January, 1922.
[2] *Chemist and Druggist*, vol. 82, 1913, p. 212.

A CONTRIBUTORY SCHEME FOR THE HOSPITALS OF LONDON.

ON February 27th the Secretary of King Edward's Hospital Fund for London addressed a circular letter to the chairmen of the various metropolitan hospitals reminding them of the two money-raising schemes submitted at the close of last year to the London Regional Committee of the British Hospitals Association.

The Regional Committee, after consulting the constituent hospitals, submitted to the King's Fund on January 12th two schemes unanimously approved in principle by that committee, with a proviso in the case of the contributory scheme that before contributions were collected under it counsel's opinion should be obtained that it contained no contract for treatment, express or implied. The scheme was then redrafted, after consultation with Mr. Douglas Hogg, K.C., with a view to meeting apprehensions expressed by the medical members of the Council of the King's Fund. The revised scheme, together with counsel's opinion, is as follows:

KING EDWARD'S HOSPITAL FUND FOR LONDON.

London Hospitals Contributory Scheme.

Objects of the Scheme.—To enable wage-earners by means of an organized system of moderate and continuous contributions (i) to give voluntary assistance to the hospitals of London in carrying on their work of curing disease and alleviating suffering, and (ii) to be relieved, together with their dependants, from all hospital charges when receiving hospital services.

Need for the Scheme.—The expenditure of the hospitals has grown enormously in recent years, partly owing to the rise in wages and in the price of provisions, fuel, etc., and partly owing to the costliness of the equipment needed to fight disease by modern methods. The result is that very many of the hospitals are overwhelmed with debt, and in some cases they have had to close many beds. While they will continue, in accordance with the principles on which they were founded, to care for the necessitous poor without payment, they can no longer exempt from payment persons in receipt of good regular wages or income. Many hospitals are already making charges towards the cost of maintenance, but such charges represent only a fraction of the cost, and even so are frequently too heavy for patients to pay when incapacitated by illness. It is only reasonable, therefore, that the classes from which the majority of hospital patients are drawn should save while in health for the hospitals, and that the savings should be pooled, so that when a contributor has been admitted to hospital treatment a fund may be available to lighten the burden of the hospital.

Scope of the Scheme.—It is not intended that hospitals should afford any facilities other than those already provided by them, or that any alteration should be made in the arrangements now in force at individual hospitals for the admission of persons as in-patients or out-patients, or for their treatment by the medical staffs: the hospital will continue to decide what cases are suitable for hospital treatment, and the order of priority in which applicants are to be admitted. The scheme has nothing to do with National Health Insurance, and leaves untouched the position and responsibility of the general practitioner; it does not cover ordinary maternity cases or any treatment for which provision is made by the State or local authorities.

Who may Join the Scheme.—In order to avoid abuse by those who can afford to pay for treatment outside the hospital, it is necessary to fix a strict income limit. Accordingly, the scheme is confined to persons whose individual income does not exceed £4 a week for a single man or woman, £5 a week for a man and wife with no children under 16, £6 a week for a man and wife with children under 16. Such persons being employees in a factory or other unit of employment, or members of societies established for mutual benefit, will join in groups.

Organization.—All contributions will be collected within the factory or other group and will be paid over to a central organization distinct from the King's Fund and from any individual hospital, but so composed as to secure the co-operation of all interests concerned. This organization will, unless and until hospitals otherwise arrange, distribute the funds collected under the scheme, after deduction of expenses of collection and administration, as payments towards the cost of patients after admission to hospital.

Conditions.—Regular contributors of 12s. per annum paid in one sum in advance, or 13s. per annum paid in weekly instalments of 3d., will, together with their wives and children under 16, when accepted for treatment by a hospital, be relieved, by payments made on their behalf by the central organization, from contributing to their cost of maintenance as in-patients and from any charge in all out-patient departments.

7, Walbrook, E.C.4, February 25th, 1922.

Opinion of Counsel.

I have carefully considered the above scheme. In my opinion it is quite clear that the scheme creates no contract of any kind with a contributor to give him treatment.

(Signed) DOUGLAS MCGAREL HOGG.

Temple, February 24th, 1922.

At a special Council meeting of the King's Fund held at the House of Lords on March 8th, with the Earl of Donoughmore in the chair, Lord Somerleyton presented a report of the Management Committee, and moved the adoption of recommendations on the subject of the proposed contributory scheme and the combined public appeal. The motion was seconded by Sir Cooper Perry. Amendments proposed by Sir William Collins and the Speaker of the House of Commons having been accepted, the resolutions were passed in the following form:

(i) That the scheme as redrafted be accepted in its main lines by the General Council as removing the reason for postponing the contributory scheme.
(ii) That the King's Fund should not itself administer a contributory scheme, but should, through its propaganda for the combined public appeal, assist all hospitals in their efforts to secure support from the classes whose members are treated in hospital; and should assist such hospitals as, after consultation with their medical staff, desire to initiate mass contributions in various forms.

AN anonymous gift of 100,000 dollars has been made to Yale University for the establishment of a professorship in honour of Dr. William H. Carmalt, who retired a few years ago after fifty years of distinguished service in surgery.

AT the recent annual meeting of the New York Tuberculosis Association Mr. G. J. Drolet, statistician of the Association, stated that in New York City the coming into the population of a large Jewish stock, noted for their immunity to the diseases of congested city life, had been a considerable factor in reducing the death rate from tuberculosis. The lowest mortality prevailed in the districts which were largely Jewish, whereas in the districts where the poorer immigrants of Irish and Italian stock lived, as well as in the artist and Bohemian colonies of Greenwich Village, the tuberculosis death rate was very much larger.

British Medical Journal.

SATURDAY, MARCH 18TH, 1922.

INSANITY AND THE REPRODUCTIVE GLANDS.

PSYCHIATRISTS have long recognized the intimate relation between disordered sexual function and insanity. It is in adolescence, when new and disturbing forces surge into activity, that this relation is observed most clearly. At this time the process of development is subjected to a severe strain, and the individual has to adjust himself to unaccustomed feelings and needs; it is then that any tendency to instability is apt to find manifest expression in forms which vary from the milder neuroses to the graver psychoses. The Morison Lectures and the Maudsley Lecture for 1921, both delivered by Sir Frederick Mott, constitute a notable addition to our knowledge of this aspect of psychiatry.[1] The Morison Lectures are concerned with the psychopathology of puberty and adolescence, and Sir Frederick Mott points out that the lecturer of 1890, Sir Thomas Clouston, made it one of the objects of his lectures to show the relation between the physiology and pathology of reproduction to the neuroses and psychoses. At this time our knowledge of the reproductive endocrine system was only in its infancy, but the recent researches on the pathological changes found in cases of dementia praecox have served to demonstrate the organic conditions which find expression in this grave form of mental disorder. Feeling convinced that certain forms of mental disease were correlated with morbid changes in the reproductive organs, Sir Frederick Mott has made histological examinations of these organs obtained from patients of both sexes dying in asylums. The research is all the more valuable as it was controlled by an exhaustive study of the human testis and ovary, at various ages from birth onwards, of individuals dying from various injuries or disease. A full account of this investigation was published in the BRITISH MEDICAL JOURNAL, November 22nd, 29th, and December 6th, 1919, and on the last date comments were made on the research in a leading article. It thus suffices to state briefly that demonstrable changes were discovered, which definitely indicated the existence of regressive atrophy in the testes and ovaries in cases of dementia praecox. In the male, spermatogenesis had largely ceased, and in the female the ova had failed to mature. Parallel with this regressive atrophy in the reproductive glands certain changes occur in the central nervous system. These consist essentially of decay and degeneration of the neurones, the nucleus and cytoplasm of the nerve cell being involved without any notable change in the vessels or supporting tissues. The consideration of these facts, together with those known in regard to the biochemistry of the grey matter, leads Sir Frederick Mott to formulate the hypothesis "that the failure of function in dementia praecox may be correlated with a failure of oxidation processes in the grey matter, owing to a deficiency of the vital energy of the nucleus, as shown by morphological and biochemical changes in the nucleus and a failure in the production of the substance which is the antecedent of the Nissl granules."

[1] *Journal of Mental Science*, vol. lxvi, No. 279.

In estimating the significance of these pathological changes in the reproductive organs and the brain respectively, the view is taken that they are manifestations of one and the same morbid process. It is suggested that dementia praecox is the expression of a failure of vital energy of the cells of the whole body, manifesting itself more especially in the sexual organs and brain, particularly in that part of the brain which constitutes the highest or psycho-physiological level. The biochemical changes in the reproductive organs and the nervous system are primarily of nuclear origin and dependent upon an inborn germinal defect. These researches throw much light on the course and symptoms of dementia praecox, and the views formulated by Sir Frederick Mott are largely in harmony with the clinical facts. It is true that a certain number of cases diagnosed as dementia praecox tend to recover, but the clinical investigations of Kraepelin, in which cases have been followed up for a number of years, make it clear that a more or less unfavourable outcome is probable, and in many instances severe and definite deterioration occurs. And not only the course of the disorder, but the symptoms as well are readily understandable as a premature failure of that vital energy of the organism which derives its main source in adolescence from the activity of the reproductive organs.

If it be the case, then, that the dementia praecox group—in a clinical sense somewhat vaguely delimited—is explicable on the basis of an inherent lack of durability of vital organic functions, the question arises as to how far mental breakdown is inevitable in the subjects of this inborn germinal deficiency. It must be admitted that a large number of these cases have the appearance of complete inevitability; the onset of the disorder cannot be correlated with any external or removable stress, and its course is uninfluenced by any known form of therapy. This, however, is not invariably the case, and a precipitating factor may often be found in some situation which makes unusual demands on the predisposed individual. Dr. J. S. Bolton emphasizes this fact in his work on *The Brain in Health and Disease*.* He shows that many cases are especially prone to break down under the mental stress involved in the general change in the function of the cerebrum from the mere acquisition of information to the performance of the higher processes of mind, which change occurs about the period of puberty. This is clearly seen from the fact that overstudy and intense application at this epoch often leads to overstrain of unstable cortical neurones which finds expression in a temporary or permanent attack of insanity. It is also no doubt true, as Bolton further points out, that many mild cases of dementia praecox (premature dementia) are to be found in the outside world. He includes amongst these those individuals who overstrain their mental capacities in youth—both the brilliant student and the one of inferior capacity who obtains a degree by dint of exceptional perseverance—and who in after-life fail to maintain their early promise and lead an ordinary and stereotyped existence. It is probably necessary, therefore, to take a very wide view as to what is included under the heading of dementia praecox, and to recognize that a diminished durability and vitality of biological functions exist, in varying degrees, in a greater number of individuals than is generally supposed.

Observations such as these are not without significance for the clinical psychiatrist; they would seem to indicate, that though dementia praecox has an organic basis, the development of actual insanity in predisposed individuals is not entirely inevitable. If it were more generally recognized that (as is actually the case) many subjects of dementia praecox have since childhood exhibited abnormal personality traits of a type well known to psychiatrists, special measures might be taken to prevent

an actual mental breakdown. As it is, the superficial brilliance which these children are apt to display is exploited by their parents and teachers, and they are submitted to the evil effects of intellectual overstrain. It is probably true, also, that many patients in whom the diagnosis of dementia praecox is quite properly made not only make good social recoveries but remain well for a number of years if they lead a life suitable to their physiological disabilities. Unfortunately it often happens that the subject of an attack of adolescent insanity, who makes a good recovery associated with no more than a slight and almost indefinable degree of permanent deterioration, is found to break down again as a result of marriage or pregnancy. In view of the changes which are now known to occur in the reproductive organs in these cases it is readily understandable why such a relapse should take place, and no doubt a number of individuals who eventually become inmates of asylums might remain socially productive for many years if they submitted themselves to a life suitable to their diminished biological capacities. These and other clinical matters are considered throughout the lectures with which our comments are concerned, and more particularly so in a section devoted to the correlation of the morphological, micro-chemical, and chemical changes discovered in the brain and reproductive organs in cases of dementia praecox with the fundamental symptoms of this disorder. It is to be hoped that Sir Frederick Mott will continue these researches at the Maudsley Hospital, since they do much to illuminate one of the most obscure problems in medicine. The conclusions reached in these lectures are the outcome of an enormous amount of skilled and patient research, and the results of further investigation cannot fail to be of great value and interest.

QUACKERY IN RELATION TO DISEASES OF THE EYE.

IN his presidential address at the opening of the forty-eighth session of the Bristol Medico-Chirurgical Society[1] Mr. Cyril Walker gave a racy account of the activity of the quack in the treatment of eye diseases. Scarcely any branch of medicine has been more invaded by advertising charlatans. The term "quack" or "quacksalver" came into common use in the reign of Charles I; it is supposed to have been derived from the noisy, reiterated chatter of the medicine vendor at fairs. The word and its synonyms are common in seventeenth-century works. A quack is defined in the *New English Dictionary* as "an ignorant pretender to medical or surgical skill . . . an empiric or impostor in medicine," but probably Dr. George Gould of Philadelphia puts it better thus: "A quack is a man more interested in himself than in his healing art; caring more for his patent than his patient."

During the Middle Ages treatment of disease of the eye was very largely in the hands of itinerant quacks, who went from fair to fair selling nostrums to the credulous, and couching cataracts when occasion offered. In the time of James I these were first called "oculists," and the term has in consequence never found much favour with members of the medical profession, though the public still cling to it. Certain cures for all sorts of diseases were advertised broadcast in the eighteenth century, and Oliver Goldsmith in his *Citizen of the World* observes, "There must be something strangely obstinate in an English patient who refuses so much health upon such easy terms." Queen Anne, whose weak eyes were a source of much profit to the quack oculists, indulged in quackery on her own account by reviving the very old superstition of "touching" for the King's evil. As there was no scientific ophthalmology in her day she was the natural prey of quacks. She appointed as her oculists two charlatans: one, William Read, received a knighthood; the other is mentioned by Addison as notorious for "putting out eyes with great success." Read's praises were sung in a hack poem entitled *The Oculist*. With these worthies began the now much coveted and respected title of "Surgeon-Oculist to the King." By far the greatest quack of those times was "the Chevalier" Taylor. He had some claim to be looked on as a qualified surgeon, and was certainly a man of immense energy and ability; but Samuel Johnson, who was well acquainted with John Taylor, described him as the most ignorant man he ever knew. He was appointed "Ophthalmiator Pontifical" to the Pope and oculist to the Kings of England, Denmark, Poland, Norway, and Sweden. His entry into towns was a sensational affair. In what he calls "the crisis of his grandeur" he travelled "with no less than two coaches and six, above ten servants in livery, besides gentlemen, my companions in my own pay." Gibbon was among his patients, and he operated on Handel for cataract, "but on drawing the curtain we found the bottom defective."

Beside Taylor the quacks of to-day may seem unenterprising; for anything like his audacity one has to go to America. But, as has often been remarked, the love of mystery is deeply implanted in the human breast, and this gives quackery a great advantage over science. Even in France, where the pharmacist is discouraged from selling secret remedies, quack treatments abound. Some are vastly amusing, such as the "cure" investigated by Dr. Darier. It was based on Bier's suction apparatus. Darier submitted himself to treatment with a machine of much splendour, and had demonstrated to him that his vision had been doubled in acuity by suction on his temples. But the patient observed that the test card had two faces, and the marks exposed on the one side were double the size of those on the other. A German developed a system of ocular signs of disease: the markings of the irides corresponded with certain organs and their diseases. As Mr. Cyril Walker states, "palmistry is credibility itself in comparison," yet the vogue lives to-day; we heard of it as a novelty last year from a most intelligent man, and several inquiries came to us from ingenuous persons who had read of "ocular diagnosis" in the newspapers. At a certain well-known clinic in Germany many sufferers from hopeless conditions used to congregate before the war: all seemed to have had one treatment—the wet pack and mercurial inunction; sufferers from pituitary tumour and from alcoholic amblyopia each got the same.

In England a good deal of humbug is associated with the prescription of spectacles by opticians. Some sight-testing opticians who visit country towns are distinctly amusing. One warns "the *in*credulous public against unscrupulous imitators," another states that "unless there is a reasonable hope of the patient being benefited he is told so, but should the case present any diminution of hope it is undertaken, and in almost every instance successfully so." The temptation to the optician to order spectacles whether they are needed or not is strong, for he lives by his sales. Mr. Cyril Walker concludes that the best check to quackery is the provision of a sufficient number of capable practitioners able and willing to undertake ophthalmic work. When the doctors do not do this work it is inevitable that the people will drift to the advertisers. He points to the provision made by the State for the treatment of the children in elementary schools, and considers that the parent may reasonably claim the same advantages as his children enjoy. Lastly, the general practitioner should be able at least to decide when to persuade his patients to seek advice, rather than allow them to drift to the sight-testing optician or the quack.

[1] *The Bristol Medico-Chirurgical Journal*, vol. xxxviii, No. 144, December, 1921, p. 129.

THE CENTENARY VOLUME OF THE ACADÉMIE DE MÉDECINE OF PARIS.

To celebrate its centenary on December 20th, 1920, the Académie de Médecine de Paris extended its hospitality to thirty-one countries, from which ninety-one delegates were entertained and presented with a beautiful centenary medal designed by Dr. M. P. Richer. The Académie de Médecine has now brought out a sumptuously illustrated and printed volume [1] in commemoration of the centenary. After reciting the original charter granted at the Château des Tuileries on December 20th, 1820, by Louis XVIII, the volume records the proceedings and addresses of the celebration, commencing with the address of M. Laveran, the President, who pointed out that the Académie de Médecine was founded to continue the work of two societies—of medicine and of surgery—which had been dissolved by the convention in 1793, probably because they were suspected of tendencies hostile to those in power. In addition there was a short-lived Académie de Médecine, started in 1804, in the presidential chair of which the well-known Dr. J. I. Guillotin once sat. The first president of honour of the present academy was Baron Antoine Portal, of whose bust there is a fine reproduction. Among the congratulatory addresses presented by the delegates those of the Royal College of Physicians of Edinburgh, the University of Padua, and the Carolin Institute of Medicine and Surgery of Stockholm are artistically reproduced. The other formal addresses by the Secretary-General, Professor O. Achard, M. Honnorat, Drs. Richelot, D'Espine of Geneva, Vaillard, A. Chauffard, E. Delorme, M. Hanriot, Meillère, and Camus follow; in connexion with Dr. Camus's account of the Academy's activities in vaccination there is a full-page plate containing four portraits: of Le Duc de Larochefoucauld Liancourt, Fondateur de la Société Centrale de Vaccine; H. M. Husson, Secrétaire du Comité Central de Vaccine; E. Jenner; and William Woodville, who imported vaccine into France in 1800. The record is made especially interesting by the inclusion of fourteen well-executed photographs of the members of the Academy in 1920, arranged in groups representing the various sections.

SURGICAL DISCUSSIONS AT THE GLASGOW MEETING.

THE scientific sections at the ninetieth Annual Meeting of the British Medical Association, to be held in Glasgow next summer, under the presidency of Sir William Macewen, will meet in the University buildings on Wednesday, Thursday, and Friday, July 26th, 27th, and 28th. The names of the officers of sections were printed in the SUPPLEMENT of February 18th, and the provisional programme of the meeting in that of March 4th. The officers of the Surgical Section, of which Professor Alexis Thomson is president, have chosen the following subjects for discussion:—First day: The diagnosis and treatment of cholelithiasis. Second day: The treatment of tuberculous glands. Third day: The surgical treatment of non-malignant affections of the colon. We are asked to say that the secretaries of this section will be glad to receive the names of those desirous of taking part in the discussion of the above subjects, and also the titles of their papers from those desirous of reading papers. The honorary secretaries of the Section of Surgery are Dr. J. A. C. Macewen, 3, Woodside Crescent, Charing Cross, Glasgow; Dr. John Patrick, 9, Newton Place, Glasgow; and Mr. H. S. Souttar, 59, Queen Anne Street, London, W.1. The local honorary secretary of the Annual Meeting is Dr. George A. Allan, The University, Glasgow.

ROMAN SURGERY IN THE FIRST CENTURY.

As Sir Clifford Allbutt points out in his masterly review of *Greek Medicine in Rome*, it was from the intellectual and agile Greeks that Rome obtained the ideas directing medicine, science, and philosophy; and in the course of this book, which was founded on the FitzPatrick Lectures he gave to the Royal College of Physicians of London, he shows that, as contrasted with internal medicine, the surgical descriptions and procedures were more direct, definite, and accurate. In a recent article Mr. A. Don has taken up the theme from the more limited aspect of Roman surgery in the first century,[1] and for this purpose relies mainly on the works of the encyclopaedist Celsus, who has been called "the Roman Hippocrates," and also, though with less laudatory intent, "Hippocrates's ape." Celsus also wrote on rhetoric, philosophy, law, and the art of war; but as he was a Roman citizen, and probably a patrician, it would have been beneath his dignity to have practised the healing art, which was in the hands of Greeks and slaves. According to Mr. Don, however, a critical examination of his works proves not only how well versed in surgery he was but that he must have watched very closely the operations of others and occasionally operated himself. Celsus divided medicine into pharmacology, dietetics, and surgery, and remarked, "surgery does not reject the other branches, but it effects most by the hand." Physicians had a broader field of, at any rate superficial, activity at this period than now, for it included inflammation, ulcers, and in fact all diseases except those in which the surgeon had to make the first wound or where manual operation would be more efficacious, and lastly diseases and injuries of bones. The physicians were the bleeders, blood-letting being a reputed panacea, sometimes beneficial, seldom dangerous, and always lucrative. Mr. Don brings forward examples to show that surgical practice in the first century was often on the lines now approved; thus the Roman method of extracting weapons and other foreign bodies was practically the same as our own, and cysts were excised without opening the sac if possible; the tonsils were enucleated according to the method employed in our best clinics; catheterization was performed in a manner that would do credit to a modern professor. After pointing out that trephining was practised in almost all fractures of the vault, the dura mater being left intact if possible, as was the procedure in the recent war, Mr. Don remarks: "Celsus would have made a model surgical specialist in a team 'head' hospital in France; he advocated trephining on the opposite side in *contrecoup*, and was well acquainted with hernia of the brain and with depressed fracture." Only a few of the more common dislocations are well described by Celsus, who generally follows the teaching of Hippocrates in this respect, though he differs from the Father of Medicine in recommending that no attempt should be made to reduce dislocations of the spine, on the ground that in complete dislocation the cord will have been severed and the nerves torn, and in incomplete dislocation the bones will not stay in position when reduced. His symptomatology of dislocations of the head of the femur is nearly as accurate and full as the well-known signs given by Sir Astley Cooper.

THE NEW SCHOOL OF HYGIENE.

IN the JOURNAL on February 25th (p. 325) and on March 4th (p. 361) we announced and discussed the gift of the Rockefeller Foundation of two million dollars (approximately £400,000) for the establishment and equipment of an institute or school of hygiene in London. The Minister of Health, in informing the House of Commons of the acceptance of this generous offer, said that the Government would provide the annual expenditure for staff and maintenance, estimated at some £25,000 a year. Sir Alfred Mond added that he would set up a committee to advise him on the preliminary steps to be taken in regard to the site and planning of the school of hygiene. The Ministry of Health now announces the composition of this committee. The chairman is Sir Arthur Robinson, First Secretary of the Ministry; the other members are Sir Frank Baines, Director of Works, H.M. Office of Works; Dr. H. H. Dale, F.R.S., Head of the Department of Biochemistry and Pharmacology under the Medical Research Council; Sir Walter Fletcher, M.D., F.R.S., Secretary of the Medical Research Council; Major General Sir William

[1] *Centenaire de l'Académie de Médecine*, 1820–1920. Publié par les soins du Bureau de l'Académie. Paris: Masson et Cie. 1921. (12 × 8; pp. 278; 24 illustrations. No price.)

[1] A. Don, *Caledonian Med. Journ.*, Glasgow, 1922, xi, 350–359.

Leishman, F.R.S., Director of Pathology, Army Medical Service; Sir George Newman, M.D., Chief Medical Officer of the Ministry of Health and the Board of Education; Sir Cooper Perry, M.D., Principal Officer of the University of London; and Sir Herbert J. Read, Assistant Under-Secretary of the Colonial Office. The secretary of the Committee is Dr. H. Meredith Richards of the Ministry of Health.

PROHIBITION AND THE MEDICAL PROFESSION.

SOME time ago the *Journal of the American Medical Association* issued a set of questions on the use of alcohol in the practice of medicine to 53,000 medical practitioners (37 per cent. of the practitioners in the United States), and answers were received from 31,115, or 58 per cent.; 25,819, or 83 per cent., of the medical men were general practitioners, 2,401 were engaged in surgical specialities, and 2,825 in non-surgical specialities. The total number who expressed an opinion on the question whether whisky was necessary in the treatment of disease was 30,843; of these, 15,625, or 51 per cent., answered in the affirmative, and 15,218, or 49 per cent., in the negative. The question whether beer was a necessary therapeutic agent in the practice of medicine was answered in the negative by 74 per cent., and in the affirmative by 26 per cent. To the question whether wine was a necessary therapeutic agent the answer was in the negative in 68 per cent., and in the affirmative in 32 per cent. The North Atlantic and South Atlantic States gave a majority affirming that whisky was necessary as a therapeutic agent, while in the North Central, South Central, and Western States the majority thought otherwise. Thirty-two of the fifty largest cities affirmed that whisky was necessary as a therapeutic agent, seven gave a majority vote favouring wine, and only two gave a majority vote favouring beer. Of the medical practitioners who replied, 22 per cent. stated that instances had actually occurred in their own practices in which unnecessary suffering or death had resulted from the enforcement of prohibition laws, but the remainder stated that they had not seen such cases. The reply to the question whether medical men should be restricted in prescribing whisky, beer, and wine was in the affirmative in 58 per cent., and 42 per cent. believed that there should be no restrictions; practitioners in the rural districts were more inclined to favour restrictions than those in the cities. An editorial note suggests that the inquiry has definitely shown that the present regulations in the United States governing the use of alcoholic beverages are not satisfactory. Many practitioners who were convinced that these drugs were not necessary therapeutically were emphatic in stating that others who believed them necessary were entitled to have their views respected, and were warranted in their efforts to have the drugs made available without incurring the odium attaching under the present regulations.

THE EFFECT OF ALCOHOL ON GASTRIC DIGESTION.

THIS would at first sight appear to be a well-worn line of research, and indeed this is shown by the list of 182 references attached to Aksel O. Haneborg's thesis in English on the effects of alcohol upon digestion in the stomach,[1] which contains the results of work carried out in the Physiological Institute of the University of Christiania and in the hospitals of that city. Much of the physiological work in the past has been carried out with commercial pepsin *in vitro*, and hence Haneborg's experiments performed on healthy persons and patients with various disorders approach much more closely to those of ordinary practice. These show that 75 per cent. of alcohol, taken in the proportion of 0.5 c.cm. per kilo of body weight, is absorbed from the stomach in half an hour, and that after the lapse of an hour from the time of taking it, alcohol has practically disappeared from the stomach. Very little alcohol when taken in this amount passes into the small intestine. The alcohol undergoes combustion within three or four hours, and only 0.1 to 0.5 per cent. of that consumed is excreted in the urine. It is rather surprising to find that chronic gastritis does not interfere with the absorption of alcohol from the stomach. By giving alcohol in test meals on patients with gastric disorders an attempt was made to determine the indications and contraindications for alcohol in these diseases; but as the secretion of gastric juice depends on a number of factors, the effects of which at any given moment it is difficult to control, final conclusions require a very large series of observations. Alcohol increases the secretion of gastric juice probably by its action on the nervous system after absorption, but the psychical effect of alcoholic drinks, produced by sight, smell, and taste, appears to be less important than might be expected. There is a difference between the action of pure alcohol, on the one hand, and of beer and wine, on the other; thus, beer and wine retard digestion because their salts neutralize the free hydrochloric acid; but later, when absorption into the blood has occurred, there is an increased secretion of gastric juice, as in the case of pure alcohol. Indirectly, by increasing the amount of hydrochloric acid, alcohol in certain cases increases the rate at which the stomach is emptied. In hyperchlorhydria and ulcer alcohol is clearly contraindicated, but in conditions with deficient secretion it is of use, though not in complete achylia. After the age of 50 years there is deficiency of free HCl in 30 to 50 per cent. of ordinary persons, and though with suitable food no symptoms of discomfort should arise, an unsuitable diet readily has this effect, which may be alleviated by alcohol. Haneborg, however, considers that his observations tend to lower the former reputation of alcohol as a stomachic, and insists that there should never be more than 10 per cent. of alcohol in the gastric contents, otherwise the pepsin is affected. This is surely so large a proportion that it can seldom be reached if the alcohol be taken at a meal. In carcinoma of the stomach alcohol may relieve pain by its narcotic action, and retard fermentation in patients with pyloric obstruction; better results, he says, are obtained with whisky and brandy than with wines and beer.

[1] The Effects of Alcohol upon Digestion in the Stomach. By Aksel O. Haneborg. *Acta Medica Scandinavica*, Supplementum I. Christiania: Grondahl and Son. 1921. (Pp. 128. Price not stated.)

SKIN EFFECTS OF ULTRA-VIOLET AND RADIUM RADIATION.

IN a communication to the Röntgen Society on March 7th Mr. L. H. Clark and Mr. B. D. Watters, of the Physics Department of the Middlesex Hospital, gave the comparative results of exposures of the skin to ultra-violet radiation and to the beta rays of radium. The object of the experiment was to find out whether there was any connexion between the effect of these radiations on the skin and the photographic action and ionizing effects to which they also give rise. One interesting fact revealed in the course of the experiments was that the erythema resulting from exposure to ultra-violet radiation can be made to disappear completely by simply stretching the irradiated skin. When the tension upon the skin is relaxed the erythema reappears. Such an action can be shown with ease on the day of irradiation, though later on it is not so clear. It was also discovered within what range of wave lengths of ultra-violet the skin reaction to exposure is most intense, and from these studies it would appear that very considerable portions of the radiation emitted by arcs of mercury, tungsten, and iron are relatively ineffective in their action upon the skin. It is the more refrangible ultra-violet radiations which are most effective in exciting skin reaction, and this fact suggests the need for care when taking photographic action to indicate the skin response. A tint method for indicating the skin reaction, which is based upon the photographic action of the whole radiation from a given source of ultra-violet light, is liable to fail, although the tint method is quite efficient in the case of beta radiation. The photographic plate, sensitive as it is to the whole range of visible light and ultra-violet radiations, fails to discriminate between those radiations which excite an erythema reaction and those which are inactive so far as the skin is concerned. It is clear that there is no accurate method of measuring the therapeutic activity of the ultra-

violet radiations from a quartz mercury arc. Neither the photographic nor the ionization method is trustworthy here, although both may be applied in measuring the action of the beta rays of radium. Another point noted by the authors was that the time which elapsed between irradiation and the appearance of the reaction was much shorter in the case of exposures to the mercury arc than in the case of exposures to beta rays. Some accurate method of measuring the efficiency of sources of ultra-violet radiation when used for clinical purposes is clearly called for.

THE GROWTH OF THE HUMAN FACE.

THE paper entitled "A contribution to the mechanism of growth of the human face," a report of which we publish on another page, is of more than passing interest. The desire of the authors (Sir Arthur Keith and Mr. George Campion) was to furnish a description of the normal growth of the human face which should serve as a basis for the orthodontist to work from, and they have given an account which, if not final (and it is not claimed as such by the authors), at least merits the close attention of all anatomists, and must always remain a conspicuous contribution to the literature of the subject. We know of no other work in this line which compares with it. The method of superposing sectional plans in order to compare growing with adult skulls is also employed by Sir Arthur Keith in this paper to compare modern with neolithic faces, and normal with "adenoid" and acromegalic faces. He concludes that the neolithic face was longer than that of the modern well-developed Englishman, which in turn is both longer and broader than the adenoid face. He also shows that the acromegalic face increases by a process of true growth. The paper thus becomes interesting not only to the anatomist, but to the biologist and to a large number of specialists beyond the orthodontists to whom it was originally presented. The British Society for the Study of Orthodontics is to be congratulated on having secured so valuable a communication, and we trust it will make its reprints available to all who are interested in the subject.

THE IMPORTANCE OF CARBOHYDRATES.

IF prehistoric ages can be described as stone or bronze, the present age, with even more justification, might be called the carbohydrate age, for not only do men rely upon carbohydrates for food and for a large part of their clothing, but they use nitro-cellulose to make war, and disseminate their news upon a web of vegetable fibre, and in both instances they are dependent upon the carbohydrate productiveness of plants. Dr. P. Haas, lecturer on plant chemistry at University College, London, in an address to the Pharmaceutical Society on March 9th on the importance of carbohydrates in present-day economy, described much recent work which has been done with the object of increasing the carbohydrate activity of the vegetable kingdom. In Germany attempts have been made to stimulate carbohydrate production by increasing the carbon dioxide in the atmosphere, either by applying waste fuel gas to the plants in hothouses (the gas being freed from poisonous constituents) or by assisting fermentation of the fertilizer or manure strewn on the ground. It is said that a 50 per cent. increase in the yield of tomatoes and beetroot has been obtained by these methods. In the case of sugars, the lecturer referred to recent attempts to place the beet industry, both in this country and on the Continent, on an economic footing; so far as starches are concerned, much has been done to render both wheat and potatoes immune from the diseases to which they are liable, and to cross wheat so as to secure a greater yield of flour; while cellulose, the most widely distributed organic compound on the planet, although of no use as a food material for human beings, has lately had its food value for herbivorous animals increased, for the treatment of straw by alkali has made it much more digestible to horses. Another great field for carbohydrate economy is timber. Dr. Haas mentioned that in this country every year our timber consumption represents a forest equal in area to the counties of London and Middlesex, and that one of our daily newspapers eats up two acres of mature pine forest every day. There is practically only one carbohydrate—lactose—which man can obtain from the animal kingdom: for all the rest he is dependent on plants.

MEDICAL SOCIETY OF LONDON.

A SOCIAL guide-book to the medical institutions of England would certainly place three asterisks, in the manner of Baedeker, against the annual dinner of the Medical Society of London. The Society was founded in 1773, "to give the practitioners of the healing art frequent opportunities of meeting together and conferring with each other concerning any difficult or uncommon cases which may have occurred, or communicating any new discoveries in medicine which have been made either at home or abroad." Another object always kept in view has been the promotion of good-fellowship among the members. The 149th anniversary dinner held on March 8th at the Wharncliffe Rooms, with the President, Mr. James Berry, F.R.C.S., in the chair, was in line with its many predecessors, and as usual the Society entertained a number of distinguished guests. The toast of prosperity to the Medical Society of London was proposed by Sir Humphry Rolleston, who recalled to his hearers the two patron saints of the Society—John Coakley Lettsom and his friend, John Fothergill—and James Sims, its President for twenty-two years. He congratulated the Society on having now as President so eminent a man as Mr. Berry. The President, in his reply, gave some entertaining extracts from old minute books, with appropriate digressions. In submitting the health of kindred societies and guests, Mr. V. Warren Low introduced, with a light touch, the names of the principal visitors: Sir Anthony Bowlby, P.R.C.S., Sir Dyce Duckworth, and Lord Knutsford, Chairman of the Research Defence Society; the Presidents of the Medico-Psychological Association (Dr. Hubert Bond), the Harveian Society (Sir William Willcox), the Medico-Legal Society (Lord Justice Atkin), the West London Medico-Chirurgical Society (Sir Lenthal Cheatle), and the Chelsea Clinical Society (Dr. David Barcroft); also Surgeon Vice-Admiral Sir Robert Hill, Medical Director-General R.N., Lieut.-General Sir John Goodwin, D.G. Army Medical Services, and Air Commodore David Munro, Medical Administrator R.A.F. The toast was responded to by Sir Robert Hill and Sir Richard Atkin, and the President's health was proposed in warm terms by Dr. Walter Carr.

THE King, by the advice of his Privy Council, has appointed Sir Nestor Tirard, M.D., F.R.C.P., to be for five years a member of the General Medical Council, in place of Mr. Norman G. Bennett, M.B., B.Ch., L.D.S., resigned.

MR. T. EASTHAM, M.B., Ch.B., lately a member of the Northern Circuit, has been appointed by the King, on the recommendation of the Lord Chancellor, a King's Counsel. On behalf of the medical profession we offer him congratulations on this honour.

A PSYCHIATRIC congress will be held in Paris on May 30th and 31st, to commemorate the centenary of the thesis in which Bayle, in 1822, for the first time defined general paralysis. The congress will be international in character, and Dr. Toulouse will be president. A banquet will be held on May 31st, at which French alienists will entertain their colleagues from allied and friendly countries. Further information may be obtained from M. Raymond Mallet, 284, Boulevard Saint-Germain, Paris.

THE thirty-third congress of the Royal Sanitary Institute will be held at Bournemouth from July 24th to 29th. Delegates from Australia, Tasmania, Canada, South Africa, Singapore, and Ceylon have already been appointed, as well as from China and Denmark. The Lord Mayor of London is honorary president of the Conference of Representatives of Sanitary Authorities, and the Lady Mayoress of the Section of Personal and Domestic Hygiene.

Medical Notes in Parliament.

[FROM OUR PARLIAMENTARY CORRESPONDENT.]

The Orthopaedic Hospital, Shepherd's Bush.

SIR HENRY FOREMAN asked, on March 9th, whether the Minister of Pensions was aware that the time for vacating the Orthopaedic Hospital at Shepherd's Bush was drawing near; if he could report whether fresh negotiations had been entered into with the guardians on the question of rent; if not, was he prepared to facilitate those negotiations by withdrawing the expression "blackmail" which he used in reply to a question on this subject recently. Major Tryon said that Mr. Macpherson was willing to withdraw any expression he had used, provided he was assured that the State would have the opportunity of continuing to maintain its disabled men in this hospital at a fair and reasonable rent. He was still prepared to stand by the offer of an increased rent which he had already made, and in order to avoid any possible doubt he was so informing the guardians. Sir H. Harris inquired whether disabled men would suffer if this hospital were closed. Major Tryon answered that according to his information the alternative hospital was a very good hospital, and in better surroundings. He was so informed by the highest medical authority the Department had, but they were prepared to allow the patients to remain on reasonable terms. The Ministry had been paying £8,000 a year since they took over the hospital up to the end of last year. They were now willing to give £12,000, but the guardians were asking £14,000. Captain Bowyer asked whether the question had been considered of letting the matter go to arbitration. Major Tryon responded that the simple solution was for the guardians to accept the reasonable and largely increased rent offered to them. Colonel Wedgwood put it to the Minister that the alternative hospital was extremely unsuitable for those who had to attend for treatment. Major Tryon said that was a perfectly good point. It was obvious that provision would have to be made for the out-patients, but he had found on inspecting both this hospital and the hospital at Roehampton that the Roehampton authorities would regard the removal from Shepherd's Bush as bringing out-patients nearer to the work being done at Roehampton. Questioned by Lady Astor whether the equipment was not far better than in any other, Major Tryon said that the equipment could be moved.

Ministry of Health.

Supplementary Votes.

On the vote on account for £148,300,000 for Civil Service and Revenue Departments, on March 14th, Mr. Clynes moved a reduction of the vote for the Ministry of Health in respect of housing; he did this to ascertain the further policy and administrative action of the Government in this matter. Mr. Rhys Davies afterwards turned the debate from questions of housing to those more immediately of health.

Mr. Davies complained of a paragraph in Circular 257, which was issued last November by the Minister, wherein he said that local authorities should require a contribution towards the cost of residential treatment of persons suffering from tuberculosis. Very few authorities had adopted this suggestion, which he held to be a violation of pledges given to persons suffering from consumption. The issue of the Circular was without precedent, because, when the Insurance Act came into operation, insured persons were entitled by law to receive sanatorium treatment under it free of charge, because they paid for it in their contributions. To require that an insured person who was consumptive should pay as a condition of entering a sanatorium would act as a deterrent against entry.

Mr. G. H. Roberts called attention to reduction in the Estimates under the heading of "Grant for the Welfare of the Blind," the sum being £20,000 less than last year's estimate. He thought that any reduction in this work would be false economy and contrary to humane ideals. He mentioned that there were 34,894 blind persons under the control of the Ministry of Health, and of these 17,228 were returned as unemployable. He urged that even in these days of stringency we should develop our plans for the treatment of the blind. Of the total number mentioned, 1,383 were mentally defective, and their case was particularly hard. He was presiding over a committee which was inquiring into the causes of blindness and defective vision, and there it had been ascertained that a good deal of blindness was preventable, and this was an additional reason for his plea for greater development in this direction.

Mr. Evans, after relating the work done by the Welsh National Memorial Association for the promotion of health, and especially to prevent the spread of tuberculosis, said that the association was in the fortunate position of being able to acquire a house called St. Bride's, in Pembrokeshire, the residence of Lord Kensington, who had spent £100,000 on this property. He was willing to sell it to the association for a very small sum—about £10,000—and with the resources that the association had they could provide beds at an average cost of £220, whereas, taking hospitals in the country generally, the cost worked out at £600 a bed. But because they had acted in a businesslike way and had not pushed forward the matter earlier, they were threatened with the loss of any grant at all from the Government. He appealed that they should be allowed the small sum they asked.

Mr. Godfrey Locker-Lampson criticized the reappointment a fortnight ago of the Chairman of the Welsh Board of Health which had been made, notwithstanding the recommendation of the Geddes Committee that the Welsh Board should be abolished. Referring to the recommendation of the Geddes Committee that unemployment and health machinery should be amalgamated, Mr. Locker-Lampson said he was aware that a Departmental Committee had been appointed to consider the subject. But the important point was this: there were only a few days in which to make the decision. Unemployment and Health Insurance cards would have to be printed in a few weeks at latest, because they had to be dispatched by the end of July.

The Minister's Reply.

Sir Alfred Mond, replying to various speeches, said that the question of tuberculosis administration was occupying the very serious attention of his department. A careful investigation was being made of the money spent by local authorities. He had been much struck by the inequality of expenditure in various localities for apparently similar services. He quite sympathized with the statements made at various times as to the value of after-care treatment. If there were more funds at disposal that would be a very useful matter in which to employ them, but at present the department could only keep going those services which were already running. He thought he could promise that in spite of reductions no health service would go back. The amalgamation of Health Insurance and Unemployment Insurance was a subject full of technical difficulties, but he believed that the Committee would be able to arrive at a solution.

Sir Alfred Mond next defended the continuance for the present of the Welsh Board of Health and said that in any case, if the work were ultimately transferred to London, the Chairman would have to be transferred with it, and therefore the reappointment was sound. With regard to the grant to the blind he said it had been found that the estimates for 1921–22 were not expended, and they were taken as the basis for the coming year, the question of what else might be necessary being deferred pending the report of the committee over which Mr. Roberts presided. He was going personally into the appeal for the grant for a tuberculosis hospital in Pembrokeshire, referred to by Mr. Evans, and so far as he had any influence he would be glad to see the work undertaken. In reference to housing he claimed that the Ministry were carrying out a large programme and believed that with a little patience they could induce private enterprise to come in again. The price for a cottage had been brought down to £400. Coming to the question of slums the Minister mentioned that when we had 400,000 empty houses in the country the figures for overcrowding were about the same as now: that demonstrated that this was not merely a question of providing houses. Indeed, they all knew that a certain number of people would not move out of a slum if provided with fresh houses. Sometimes this was because of convenience of position; sometimes because people did not care what kind of house they lived in; and sometimes because they had got so used to their surroundings they did not realize how bad they were. Slums would not be got rid of solely by providing houses. Two things of the utmost importance that could be done were being done. Local authorities should use their powers for the repair of individual houses. The reports of medical officers of health for 1920 showed what could be done under statutory powers. Over 1,000,000 houses had been inspected and notices for repair had resulted in the repair of 218 houses by owners and 1,900 by local authorities. The other step being taken was for wholesale demolition and clearing where no other course was possible.

Mr. Myers drew attention to the extensive sale in this country of milk below the standard quality. He referred especially to separated milk. He regretted to find in the estimate a reduction for the coming year of £359,000 under the heading of tuberculosis. There was a new item of £175,000 for the provision of sanatoriums, but that meant a net reduction of a little under £200,000. The country, in his opinion, was not getting value for its expenditure on tuberculosis, partly because the consumptive person was not got hold of early enough. There was actually a greater proportion of deaths from tuberculosis in proportion to the number notified in 1920 than was the case in 1913. He agreed with a remark made by Lady Astor earlier that overcrowding had a great deal to do with consumption.

The Debate Continued.

Dr. F. E. Fremantle, in an admirable examination of the housing problem, drew attention to the value of "zoning" for industrial centres as tried in New York. In regard to the prevention of venereal disease, he expressed the hope that the Minister might be able to reconcile the two voluntary associations to work together on common lines. Speaking of medical officers of health he deprecated the appointment of whole-time men when there were local men specially suited from knowledge of conditions and local advantages. He urged that Poor Law officers in their own domestic work should be associated with the health side of the Ministry of Health. Why the Poor Law medical officer was not, as he should be, the foundation of public health was because hitherto the ordinary education of the ordinary medical man had not included work on public health. The curriculum was ordained by the General Medical Council, and it could well rearrange the

curriculum to meet needs. The subject was now in the melting pot, and he suggested that the Minister of Health should offer advice to the Council in this regard.

Dr. N. Raw regretted that there had been some reduction in the amount to be devoted to the treatment of tuberculosis. The sum which the Minister had put down represented a little more than £1 a head a year in the treatment of this great disease, over a million persons being affected with it in Great Britain. He agreed, of course, that the question of housing was at the very root of the prevention of tuberculosis. He did not agree, however, with some members who argued that the money now being spent on the treatment of tuberculosis was wasted; but he agreed that a great amount of effort was wasted because the work was not continued. It was useless to devote several months to treatment in a sanatorium and allow the man to go home to living conditions in which he was almost certain to relapse. Therefore he urged the Minister to consider the importance of training in the sanatoriums and of providing tuberculosis colonies in which a man could be taught an occupation and remain.

Sir Watson Cheyne touched on the importance of preventive work in regard to tuberculosis. He referred in the first place to the need for segregation, and secondly to the danger of infection from tuberculous milk. He believed that about 60 per cent. of the various forms of disease in children were due to infection from tuberculous cattle by means of milk, and he had never been able to understand why stronger measures were not in force against this source of infection. He had received a circular which led him to fear an agitation was being started to prevent the Minister from bringing in another Milk Bill. The circular stated that it was understood that the Minister had an agreed bill. He did not think there would be an agreed bill of any use. The Government with their large majority should have no trouble in passing any measure they liked, but he was not sure that it would not be well for them if they could not arrange to be defeated on such a measure. Then they could go to the country on a "Save the Children" issue.

Lord Robert Cecil reiterated the importance of good housing for the prevention of tuberculosis.

Sir Alfred Mond, in his final reply, said that the sale of skim milk as whole milk (to which Mr. Myers had referred) was nothing less than a robbery of the people, and he cited the section of the Food and Drugs Act, 1871, under which it could be dealt with. He agreed with Sir Watson Cheyne that it was most undesirable that tuberculous milk should be sold at all, but the question of how to stop the sale was not quite so easy. There was the problem of the farmer, who might be in a difficult position.

Coming next to the matter of venereal disease, the Minister said representations had been made to him from more than one quarter whether something could not be done to get the societies dealing with this subject to combine. Nothing would give him greater pleasure than to bring this about; but it was a subject giving rise to considerable controversy. He had tried to obtain the assistance of the Medical Council and of Lord Dawson to get together a body of medical men who would look at this question from a medical point of view and advise him. He could not overlook the fact that there was also a moral aspect, and on that point he would never be a party to some of the propaganda which was being carried on. Sir Alfred Mond explained that the reason he had issued a circular of inquiry as to supplying dinners to nursing mothers instead of milk was that some very competent medical authorities thought it would be more valuable.

On a division 52 members voted for the reduction of the vote and 156 against.

Licences for Morphine.—Mr. Gilbert asked, on March 9th, what was the form of licence issued under the Dangerous Drugs Act, 1920, permitting the manufacture of morphine in Great Britain and for some further particulars as to its manufacture. Mr. Shortt said that the form was an authorization to carry on the manufacture of morphine at certain premises specified in the licence, and subject to certain conditions. The conditions were not necessarily the same in each case, but, in general, they provided for adequate supervision, exclusion of unauthorized persons, keeping of records of production, and the like. The number of firms and premises licensed was three. The amount of British-made morphine exported during 1921, as shown in the Customs Returns, was 81,098 oz., but this did not include the amount exported through the parcels post. The total amount of morphine licensed for export, including export by post, was 112,681 oz. Morphine was exported to all parts of the world, but over one-half of the amounts shown in the Customs returns went to France. Other countries which received more than 5,000 oz. were Sweden, Belgium, and Canada.

Diphtheria in London.—Sir A. Mond, on March 9th, stated that there was still considerable prevalence of diphtheria in the metropolis, the number of cases notified during each week of the present year being over 300. This, however, represented a considerable improvement as compared with the last three months of 1921.

Tuberculosis Statistics.—Sir Alfred Mond, on March 8th, said he could not accede to a request by Mr. Rhys Davies to obtain from the local authorities detailed statements of the number of persons, male and female separately, suffering from various forms of consumption in England, Scotland, and Wales. He appreciated that the information could be taken from the reports of the medical officers, but remarked that it would mean a great deal of work.

Ear Affections in Pensioners.—In answer to Mr. Alfred T. Davies, Mr. Macpherson, on March 8th, said ear affections were pensionable under the Royal Warrant according to the degree of disablement found to exist, the rate of 70 per cent. being fixed for complete deafness. In addition, skilled medical and surgical treatment appropriate to the individual circumstances was provided in ear hospitals or at special aural clinics established by the Pensions Ministry. At the present time approximately 5,500 men were receiving treatment for some form of aural disease, and those who were prevented by their treatment from working were drawing the usual allowances. Facilities for acquiring facility in lip-reading were also provided in suitable cases.

Clearing Houses and Pensions Clinics.—Mr. Alfred T. Davies asked, on March 8th, on what date it was hoped to establish clearing houses for patients seeking admission to hospitals; when the new clinics would be established and at work; and what arrangements had been made for these clearing houses and clinics. Mr. Macpherson said that the clearing-house system had been in actual working operation in all regions for some time past. It was proposed to establish 160 general clinics, 56 of which were at present in process of being set up in some of the larger towns. The remainder would be proceeded with as rapidly as possible.

Liquor Traffic: State Management.—Mr. Shortt announced, on March 8th, on inquiry by Sir A. Holbrook, that he had appointed an Advisory Council at the Home Office to deal with questions of the State management of the liquor traffic. It consisted of the Secretary for Scotland and himself, the two departmental representatives (namely, Sir John Pedder and Mr. T. J. Rose), and four others, Mr. Waters-Butler, Mr. S. E. Neville, Sir John Sykes, and Sir William Towle.

Dentists Act Regulations.—Mr. Seddon, on March 8th, moved for the annulment of the Dentists Act Regulations, which, according to the terms of the measure, had been placed on the table of the House of Commons on February 7th. He alleged that ex-service men had a grievance in the restriction of enrolment on the *Register*. Mr. Acland, who is Chairman of the Dental Board, explained the position. The Act said that to be entitled to admission to the *Register* persons ought to have practised five out of the last seven years; but the Board were also directed to take special thought and care for ex-service men if satisfied that they could safely practise. The Act contemplated that there should be some continuity of practice, but where owing to war service that continuity had been broken, some allowance should be made. Therefore the Board resolved that if a man had practised for five years, partly before and partly after war service, even though the period were not in seven years, he should be admitted automatically. Where an ex-service man had not completed five years' practice, regard must be had to the question whether he was qualified to serve the public. Unless the question of his having practised dentistry during the war arose, the Board held that he must submit to one of the examinations. No fee would be charged. In judging practice of the profession during the war the difficulties were great. Mr. Acland instanced claims by men who had carried a pair of forceps and extracted teeth from men suffering in their squadron. The conclusion reached was that unless a man had some official engagement during the war, such services as he had rendered could not be taken into account. Coming next to the complaint as to the fee of £5 charged for registration annually, he pointed out that the Board were required by the Act to raise money for dental education and research. If after a few years they had enough money to give sufficient help for education and scholarships, it might well be possible to reduce the fee to £3 or even to £2. There had not been a single protest by a dentist. Sir A. Mond, replying for the Government, covered much the same ground that Mr. Acland had done, and mentioned incidentally that the income received was between £35,000 and £40,000. He thought that at the end of a couple of years the amount of the fee might be brought under review. Mr. Acland promised that this should be done; and Mr. Seddon, after regretting that he had not obtained the explanation without raising the matter in the House, as he now recognized he could have done, withdrew his motion.

Leprosy in Great Britain.—Replying to Sir C. Yate, on March 8th, Sir A. Mond said that the question of making leprosy notifiable in this country had been carefully considered from time to time, but he was not satisfied that there was sufficient justification for this course to be taken.

Deaths from Starvation.—Mr. Robert Richardson asked, on March 8th, in what way the returns of deaths from starvation made before 1919 were unsatisfactory; whether they could be made satisfactory; whether, in fact, the Local Government Board up to 1919 did, on receipt of information from the coroner of a death from starvation or accelerated by privation, call upon the guardians for information; whether during the three years 1919–21 the usual communications had been addressed to the coroners; and if not, what steps had been taken to see whether such deaths might have been prevented by more effective Poor Law administration. He further wished to know whether any inquiry of the guardians was made by the Registrar-General. Sir A. Mond said that the selection of cases for inclusion in the old returns depended upon the terms of the verdict of the coroners' juries and on the classification of those verdicts by the several coroners. No uniform or scientific principle was followed; the return was consequently both useless and misleading. He could not see that any useful purpose could be served by a revival of the return even in an improved form. The general inspectors of the Ministry of Health were instructed to take immediate steps to investigate any suggestion made at an inquest or otherwise that a death had been due to some fault in Poor Law administration. This practice, which was instituted before 1919 and still operated, was far more effective than any steps that could have been taken on an annual return. The Registrar-General was not concerned to make any inquiry.

Paris.

(From our Correspondent.)

School Children.

"And they can't go on strike!" These words of pity and of revolt resounded the other day through the conservative halls of our Academy of Medicine. They were the concluding words of Dr. Linossier's denouncement of the present condition of the schools; in the name of hygiene and of common sense he called upon the Academy to protect the school children of France.

Dr. Linossier, the type himself of an indefatigable worker, found himself one day called upon to cultivate what Victor Hugo called the "art of being a grandfather." On leaving his laboratory he bent over the table of his grandson, a child of 9 years, and was horrified to find this boy, under the pretext of natural history (department of "carcinology"), trying to commit to memory the terminology of the different classes of crustaceans: "*crustacés planctoniques, nectoniques et benthiques*"; the weather was fine, and there was a football sleeping in the garden! The grandfather made inquiries, and found that the child worked nine and a half hours each day. His school gave him twenty-four hours of instruction each week, of which gymnastics occupied one hour—that is to say, he had twenty-three hours of mental exercise against one hour of muscular exercise. Since the pedagogues so seriously misunderstood the hygiene of children, it was time for the doctors to intervene. This is the reason why the Academy of Medicine was called upon to discuss, on January 17th and on February 14th, the courses of public instruction in our country.

You may well say that the quarrel is of old standing, has always been with us, recurring periodically on the order of the day. The last reform ended in an attempt to draw a distinction between classical instruction, including Latin, and scientific instruction (*sic*), with two modern languages obligatory. Greek was an optional language, but few took up the option. The results, however, were not brilliant. Recently an attempt was made to reconcile the humanists and the scientists and bring the quarrel to an end; as always happens, it was the schoolboy who ran the risk of having to pay the cost of the reconciliation. The humanists threw upon his back the extra load of a modern language, and the scientists benevolently admitted that Latin should be piled on top of his already badly balanced burden. At the present moment the Superior Council of Public Instruction is deliberating. It is a council of specialists, with immutable traditions, already too far from their childhood to remember it. For one of them there could be no complete man without a knowledge of Cicero's moralizings, for another knowledge of the phenols is indispensable before life can be begun. The result is that the brains of our children are "forced" as flowers in a hothouse. Brilliant flowers, but fragile ones. In the open air they are disappointing.

Happily the child has a wonderful gift of inattention, which allows him to shake himself free from all intellectual harness. He is believed to be in the class, but he is playing truant. His imagination laughs at regulations which impose the double torture of silence and of immobility. Inhibition is his intellectual defence. Oh, blessed and salutary idleness! It is intriguing to find our academicians upholding a similar thesis, which they set out in the following resolution: The time required to be given to classes and study ought not to exceed eight hours a day for children under 14 years of age. (In a secondary school—*lycée*—in Paris at the present moment the elder pupils have thirteen hours' work each day. The headmaster has lengthened the hours of sleep to nine. Two hours are left for meals and for exercise. The régime for prisoners is healthier than this.)

The Academy asks for organized games. This is difficult in the overcrowded schools of Paris, where the school yards are small and cannot be enlarged, and the majority of pupils play by proxy. And yet what an awakening of enthusiasm for sport there is among our young people! Besides games there is the teaching of manual work, carpentry, locksmith's work, and so on. In the present state of society the hour seems to have struck for training of this sort.

All this demands time. But an authority so eminent as the director of the Institut Pasteur, Dr. Roux, has declared himself in favour of the suppression of afternoon classes. The classes should be more homogeneous, and should consist of thirty pupils only, chosen according to their abilities. Those whose negative gifts keep back their schoolfellows would be rapidly eliminated; very often if sent to a technical school they will find their bent. Finally, in regard to method, the Academy proposes that less attention should be paid to the memory of the child, and puts forward as its own the suggestion of that pioneer of genius, Jean Jacques Rousseau: "*Que l'enfant invente la Science.*"

Such are the results of the recent deliberations of our highest medical authorities; they are attracting the attention of the whole country. There is nothing wiser or more urgent. It is indeed a duty to pass on the torch to the young, yet how necessary is it not to burn our fingers. It is essential to decide against that *boutade* of a cynic when a mother was worrying: "The little one is too precocious for his age, too intelligent. . . ." "Send him to school," said the father.

England and Wales.

The Leeds General Infirmary.

The statistical tables of the Leeds Infirmary for the year ending December 31st, 1921, show an increase in the amount of work carried on at this great charity and school. The number of patients treated in the wards as in-patients was 9,702, an increase of 222 over the previous year. The daily average of in-patients was 518; of this 87 represented the daily average at the two convalescent hospitals at Cookridge. This increase of work has only been rendered possible by the opening of the new wards. There yet remains one large ward which is approaching the completion of its *modernizing*, a process to which all the original wards have been subjected during the last few years, but it must depend on the state of the funds of the institution whether this can be opened in the near future. The average stay of each patient in the infirmary was sixteen days; it would not be possible for this number to be kept so low were it not for the use which is made of the semi-convalescent hospitals at Cookridge which enables the treatment to be carried out during that period when, after operations, patients require skilled attention and are not ready for ordinary convalescent treatment. The number of deaths at the hospital, including three at the semi-convalescent hospitals, was 680; of these 217 occurred within forty-eight hours of admission; if these are deducted the percentage mortality of cases admitted to the infirmary works out at 4.9. The out-patient figures show in some cases an increase and in others a decrease; thus there were 1,401 fewer casualties dealt with, the figures being 15,969 for 1920 and 14,568 for 1921; probably this must be taken in connexion with the amount of unemployment which prevails; ordinary out-patients show an increase of 683, the numbers being for each year between twenty and twenty-one thousand. The number of cases attended to in the out-patient maternity department shows a diminution in respect of the transference of this work to the Leeds Maternity Hospital and next year will show no figure referring to a maternity department, which has now been wholly transferred to the Maternity Hospital. There has been some decrease in the number of cases of venereal disease, the figures being 2,599 for 1920, and 1,804 for 1921.

In mentioning these figures one cannot but reflect upon the immense amount of work which has been done by the infirmary since the present building was opened by the late King Edward, then the Prince of Wales, in the year 1868; 415,669 patients have been treated in the wards, irrespective of about 6,000 soldiers treated during the great war. The finances of the infirmary are a source of much anxiety to the board, and have been for many years. It is earnestly to be hoped that none of the aspirations of the board will be permanently frustrated by monetary considerations. The opening of the remaining ward, which will give full effect to the plan of redistribution of beds amongst the different departments, the building, and more especially the maintenance, of the new infants' ward, and other minor but very important additions and improvements alike call loudly for more support to this great infirmary. The annual general meeting will be held towards the end of this month under the chairmanship of the new treasurer, Mr. T. L. Taylor, who has already won the confidence of the members of the board and staff, and who will prove a worthy successor to Mr. Charles Lupton, who happily still remains a member of the board.

PLYMOUTH PUBLIC HEALTH CONGRESS.

The Royal Institute of Public Health will hold its congress at Plymouth from May 31st to June 5th. The Section of State Medicine and Municipal Hygiene will be presided over by Dr. D. Llewelyn Williams, of the Welsh Board of Health, and a discussion will take place on tuberculosis, opened by Professor S. Lyle Cummins and continued by Dr. Nathan Raw and others. Another discussion will take place on the prevention of venereal disease, which will be opened by Dr. Mearns Fraser of Portsmouth and Mr. Kenneth M. Walker, and will be continued by Dr. Otto May, Mr. Wansey Bayly, and others. Dr. E. W. Hope of Liverpool will read a paper on "The unification of local health administration," and Sir Thomas Oliver will speak on "Some medical and social problems of industrial hygiene." In the Naval, Military, and Air Section, of which Surgeon Rear Admiral Sir Daniel McNabb is president, papers will be read by Colonel A. B. Soltau, Lieut.-Colonel T. S. Dudding, Surgeon Commander Digby Bell, Surgeon Commander D. H. C. Given, and others; one afternoon will be devoted to a visit to the Royal William Victualling Yard, Plymouth. Professor J. Martin Beattie is president of the Section of Bacteriology and Biochemistry, in which a number of discussions will take place on streptococci and their infections, on syphilis, and on toxic jaundice; Dr. Hideyo Noguchi will read a paper on his researches in yellow fever; Dr. W. G. Savage another on botulism and canned fruit; and other papers will be read by Professor Walker Hall of Bristol and Professor W. G. Wilson of Belfast. Lady Astor is president of the Section of Women and Public Health, in which Dr. J. W. Ballantyne will speak on "New responsibilities of the maternity hospital," Professor Louise McIlroy on "The care of the expectant mother," and Miss Frances Ivens on "The organization and the care of maternity." The other subjects dealt with in this section will include infant welfare work, crippled children, and the racial and industrial aspects of maternity. The Harben Lectures will be delivered on June 1st, 2nd, and 5th, by Professor T. Madsen of Copenhagen. The meetings of the congress will be held in the Municipal Buildings, and general meetings, receptions, etc., will be held at the Guildhall.

MEDICAL INSPECTION OF SECONDARY SCHOOL PUPILS AND INTENDING TEACHERS.

The London County Council has decided, for an experimental period of one year, to reduce the number of occasions on which medical inspection is necessary in the case of secondary school pupils. At present pupils attending secondary schools are inspected on admission, again at 12 years of age (if they were not older than that when admitted), and each subsequent year during attendance. It is now proposed to examine as a rule only at the ages of 12 and 15 years; examination at other ages will be made only in cases in which the health of the pupil appears to call for it. Candidates for the teaching profession are medically examined on five occasions—namely, when they become candidates for a probationer bursary, for a bursary, or for a student teachership, and when they enter and leave the training college. They will now be examined only three times—namely, on entering the secondary school, on entering the training college, and on leaving the training college. There may, however, be further examinations if the previous examination showed the desirability of keeping the case under review, or if the parent or headmaster has doubts about the candidate's health.

Scotland.

GLASGOW ROYAL INFIRMARY CLUB.

THE twenty-fifth annual dinner of this club was held in the North British Station Hotel on the statutory date, the second Friday of March. The President, Professor W. K. Hunter, was prevented through family bereavement from being present, and in his stead Dr. J. B. Mackenzie Anderson occupied the chair. The company numbered sixty-five, including a number of ladies. At the business meeting preceding the dinner the secretaries, Drs. W. A. Sewell and O. H. Mavor read the minutes, and presented the financial statement showing a credit balance. Mr. Henry Rutherfurd was elected president for next year, and the secretaries and committee were reappointed. The toast of the "Royal Infirmary" was given by the chairman, who recalled his own former chiefs, and compared the almost homely conditions under which he watched Lister work in King's College, London, with the elaborate aseptic ritual he found established by Macewen in Glasgow in 1890. In his able reply, Dr. Freeland Fergus drew largely upon the ancient lore of the Infirmary from 1794 to 1832, the period covered by the history written by Moses Buchanan. Dr. Fergus thought the time was ripe for a complete history to be written up to the present day. Such a record would be a history of one of the greatest institutions of its kind in the world, as in it modern surgery under the presiding genius of Lister had its birth. The toast of "Past and Present Presidents" was proposed by Dr. G. Balfour Marshall, and replied to by Dr. J. Paton Boyd and Dr. Leishman in veins reminiscent and anecdotal. The enjoyment of an evening of camaraderie and reunion of old friends was artistically supplemented by song and story contributed by Drs. Wallace Anderson, George Dalziel, Wright Thomson, Charles Read, Annabella Reid, James A. Adams, and Sewell. The box for contributions to the Medical Benevolent Fund was circulated as usual, and was found to contain £5 10s. 6d.

GLASGOW WESTERN INFIRMARY.

An interesting function in connexion with this institution took place last week in the Central Station Hotel, when a large and representative assembly gathered to do honour to Lord Glenarthur on the occasion of his retiral from the post of chairman of managers. Colonel J. A. Roxburgh, the new chairman, presided, and in the name of the managers presented to Lord Glenarthur a handsome piece of silver plate. In making the presentation the chairman reviewed the history of the institution from its inception in 1874, and paid tribute to the long and honourable record of service of his lordship over a period of thirty-four years, during seventeen of which he acted with great acceptance as chairman of the board. Sir Hector Cameron, on behalf of the staff past and present, expressed their high sense of privilege in being associated with the managers in honouring Lord Glenarthur. In acknowledgement, Lord Glenarthur thanked all his co-workers for the hearty co-operation all through his term of office, which had in large measure contributed to the success and development of the infirmary into the great institution and teaching centre which it was to-day. He referred to the important fact, in these days of enormous expenditure on maintenance, that their infirmary was still solvent. It was to the credit of Glasgow that, although the Government had agreed to give £500,000 for the assistance of voluntary hospitals whose expenditure exceeded their income from all sources, practically nothing would come to the three large infirmaries of the city. They still retained what the Scottish national poet called 'the glorious privilege of being independent," upon which they set a far higher value than on any share of Government aid, if that were coupled with any control.

EDINBURGH SURGICAL APPLIANCE SOCIETY.

The annual meeting of the Surgical Appliance Society was held at Edinburgh, with Sir Montagu Cotterill, president, in the chair. The Honorary Superintendent, in submitting the report for 1921, said that during the year 291 appliances had been supplied, 225 going to ex-service men in Craigleith and Tynecastle orthopaedic centres; the celluloid leg splints sent to the Sick Children's Hospital had also been found very beneficial. Mr. Henry Wade, who moved the adoption of the report, called attention to the display of work in the society's rooms. This type of surgical appliance was not peculiar to Edinburgh, but was an outcome of the war, differing from the commercial form. The splints were light, practical, and well made. He was glad to think that Miss Malcolm and her helpers were continuing their excellent work done during the war, keeping up the standard of excellence and carrying on in peace time the high ideals of service. There were many patients who required these appliances, but who could not afford to pay highly for them, and this work could not be put on a sound commercial basis, as the time required for making these appliances would make them too costly. It would be regrettable if the work had to stop for lack of funds, and he hoped it would be found possible to continue. He might mention that a dorsal splint in celluloid, which he had just seen made, enclosing the whole body, weighed two pounds, while a similar splint in plaster-of-Paris would weigh eighteen pounds. Professor Lorrain Smith seconded the adoption of the report, saying that there was often a difference of opinion about carrying on war charities, but such a society as this, which provided surgical comforts, was altogether good.

Correspondence.

A DIPLOMA IN TUBERCULOSIS.

SIR,—With reference to the letter of Sir Robert Philip in your issue of March 4th, p. 370, referring to the diploma of tuberculosis and describing the excellent courses arranged for the teaching of this disease at the University of Edinburgh, I am obliged to him for the friendly tone of his letter, and he will, I feel sure, pardon me if I differ from him as to the advisability of calling the new diploma by the name of Diploma in Public Health. The D.P.H. has become indissolubly associated in the minds of the general public with preventive medicine pure and simple. It is, I think, a very fine diploma, and the courses for it, if carefully pursued, form an excellent training for appointments such as those of medical officers of health, whose functions are as important as any in our common work of fighting disease. But the work of the medical officer of health is largely on administrative lines and involves an enormous variety of activities covering the whole field of hygiene. I am not one to belittle the importance of administrative medical work. On the contrary, I regard it as of the greatest possible value and as impossible to carry out efficiently unless based upon sound scientific knowledge.

But the Diploma in Tuberculous Diseases, which has been brought into existence in Wales, is not a diploma in hygiene. It is a diploma designed for those about to devote their lives to medical and surgical work in connexion with tuberculosis, and who are prepared to undergo advanced study of the fundamental problems underlying this disease. Why, then, should the issue be confused by calling it a Diploma of Public Health?

I have less to say in replying to the eloquent letter of Dr. A. Neville Cox. If the assumption is wrong that specialization in this disease is necessary—and this assumption underlies the appointments of tuberculosis physicians—then the granting of a special diploma is wrong also. In my opinion both are right, and it is this belief which has led me to advocate a Tuberculous Diseases Diploma.

No one who has served in the tropics can fail to have noticed the great improvement in the standard of medical work since the creation of the Cambridge, Liverpool, and London Diplomas in Tropical Medicine.

We have at our doors a disease which still very largely defies our methods of treatment and prevention, and which invites closer and more intelligent study. I am not without hope that the new diploma may bear good fruit in the future.—I am, etc.,

S. LYLE CUMMINS,
Professor of Tuberculosis, University College of South Wales and Monmouthshire.

Cardiff, March 13th.

THE RECOGNITION OF AORTIC INCOMPETENCE.

SIR,—I have read with great interest the paper in your issue of February 4th by Dr. E. M. Brockbank on the recognition of aortic incompetence. While quite agreeing with the writer on the frequency with which a diastolic murmur is heard down the left side of the sternum without the usual signs of aortic regurgitation, such as a water-hammer pulse, a large pulse pressure, a capillary pulse, etc., being present, I am not so sure about his interpretation of the origin of this murmur. Some years ago I gave a paper before the Association of American Physicians[1] under the heading of "Passing leakage of the pulmonary valve," in which a number of just such cases as Dr. Brockbank describes were recorded, where a soft diastolic murmur was present down the left border of the sternum without any signs of aortic disease, and which I thought were probably of pulmonary rather than of aortic origin. A feature of these cases was that the murmur tended to come and go, being present now and again absent. I note that in several of Dr. Brockbank's patients this variability occurred. He assumes that the bruit must have been missed at medical boards. This is quite possible, and far be it from me to insist upon the infallibility of such boards; but in some of my cases the same observer found the murmur there on one occasion and absent on another, which suggests that it was the bruit and not the examiner that varied.

My hypothesis was, and is, that in certain weakened states the pulmonary muscular ring is occasionally so relaxed that it fails to support the fibrous ring of the orifice, and thus permits of leakage there. If the pressure in the pulmonary artery happen to be high, as is most apt to be the case in mitral stenosis, such leakage often occurs, as was pointed out by Graham Steell.

In some experiments done in 1911 I found that in a bullock's heart a water pressure of 6½ ft. was sufficient not only to cause the pulmonary artery to balloon out in a remarkable way but also to so stretch the pulmonary orifice as to cause leakage. If, while a much higher pressure than this was being applied, one supported the pulmonary orifice with the fingers, no leakage occurred. The same experiment repeated upon a number of human hearts showed that a water pressure of 11 to 18 inches was sufficient to cause leakage at the pulmonary orifice. Such a pressure is much less than what occurs during life, but in our experiments the tissues were dead, and hence more easily stretched. If a previously adjusted ligature prevented the distension of the opening, the pressure could be greatly raised without causing leakage.

Dr. Hugh Stewart in 1909 demonstrated before the Association of American Physicians the importance of the muscular ring below the aortic orifice in preserving the integrity of that orifice, and in the same way Dr. Arthur Keith and the late G. A. Gibson[2] showed that a loss of tone in the muscular fibres surrounding the mouth of the pulmonary vessel allowed of stretching of the fibrous tissues there. The normal pressure in the normal pulmonary artery will not, of course, cause leakage, because the tone of the muscle below the orifice is good; but if the artery be relaxed from any cause (and the muscular support of the orifice may share in the relaxation), or if the pressure in the artery be raised, then leakage is apt to occur, and will be evidenced by a diastolic murmur down the left border of the sternum and in the tricuspid area. If this leakage be considerable, the right ventricle will dilate, and such dilatation will, amongst other things, tend to shift the cardiac apex towards the left. True hypertrophy of the left ventricle not only causes the apex to shift to the left but also downwards, which did not seem to be the case in any of Dr. Brockbank's patients.

Thus, while agreeing that a diastolic murmur heard down the left border of the sternum is in very many cases due to aortic leakage, I think we must conclude that such a murmur is not necessarily of this origin in the absence of all the classical signs of aortic regurgitation except the murmur, but rather remember that an increased pulmonary pressure or a relaxed pulmonary artery (and especially both these factors combined) may be sufficient to cause leakage of the pulmonary valve, which will produce just such a murmur as Dr. Brockbank describes.

When such a murmur tends to be present at one examination and absent at another the likelihood of its pulmonary origin becomes greater.

In supporting the hypothesis that this diastolic murmur is often of pulmonary orifice origin I say nothing original, but am merely echoing the views of R. B. Preble, W. S. Thayer, the late G. A. Gibson, and many others.—I am, etc.,

R. D. RUDOLF.

Toronto, Feb. 23rd.

[1] *Amer. Journ. of the Med. Sciences*, September, 1911.

PROSTATIC ENLARGEMENT.

SIR,—Perhaps you will be good enough to allow me space in which to reply to the two letters published in the BRITISH MEDICAL JOURNAL of March 11th referring to my Hunterian lecture on prostatic enlargement.

In the first place I would like to thank Mr. F. T. Paul for calling my attention to his extremely interesting article published in the *Lancet* of July 30th, 1910. In this paper Mr. Paul refers to the parallel existing between enlargement of the prostate and the changes in the female breast that occur at the climacteric. The article contains ten illustrations of sections of the prostate and of the breast, and the similarity of the histological changes in the two organs is beautifully demonstrated.

I regret that Mr. Paul's paper had escaped my notice until reading his letter. However, the fact that working along independent but converging lines of thought we have both arrived at conclusions on the subject of prostatic enlargement that are so similar surely adds strength to our observations. The parallel existing between the prostate and the breast has been noted by several observers, and it is rather remarkable that so little emphasis has been laid on the possibility of prostatic enlargement having a similar pathology to that of involutionary changes in the breast.

[2] Arterial pressure, *Edin. Med. Journ.*, March, 1911.

In reply to Dr. A. F. Martin's letter, so far from "giving the lie direct to the position in which he finds himself," my observations on the prostate are such as to encourage efforts to deal with minor degrees of enlargement by means of organotherapy. I am interested to hear that he has had success in treating certain cases by means of prostatic extract. Although I have not used this preparation in a sufficient number of cases to justify any general statement, I can certainly recall several cases of minor degrees of enlargement in which the exhibition of prostatic extract appeared to afford relief. At the present moment I am collecting all available evidence on that subject, and shall be grateful to Dr. Martin and to any other practitioners who have used the preparation if they would furnish me with particulars of their experience.—I am, etc.,

KENNETH WALKER.

London, W., March 11th.

HOLLOW VISCERA AND VESSELS: CURVATURE AND PRESSURE.

SIR,—I have been much interested in the paper on the relation of curvature to pressure in hollow viscera, published in the BRITISH MEDICAL JOURNAL of February 18th by Dr. Cranston Walker; as I also was, many years ago, when Sir Robert H. Woods sent me a copy of his communication to the *Journal of Anatomy and Physiology*, vol. xxvi, on the same subject.

I think, however, for practical purposes that the explanation I gave in your issue of February 5th, 1921, is likely to be more useful, as it shows more graphically the mechanical advantage which the heart and other hollow viscera may have when their chambers are small compared with when they are large.

My purpose, however, in now writing is to call attention to some of the physiological consequences, in the case of the heart, of the physical principles which Sir Robert H. Woods, Dr. Cranston Walker, and I have endeavoured to elucidate, of which perhaps the most striking is the greatly enhanced importance of the auricle.

The auricle begins its contraction before the ventricle, and becomes small as the ventricle becomes large and full. If their contractions should overlap, the auricle not having finished its contraction when the ventricle begins to contract, the auricle by its small size at the time might easily be more than a match for the large full ventricle. Suppose the auricle to be empty and contracting hard, a thick muscular mass would then be guarding the auriculo-ventricular orifice, and regurgitation could not take place even though the valves had not fully closed when the ventricle began its systole. That the auriculo-ventricular valves have not normally fully closed till nearly the moment of the opening of the aortic valves was always maintained by Professor Potain, probably the greatest French cardiologist of the last century. The apex beat (*choc du coeur*) Potain found fully developed before the occurrence of the sound indicating the valve closure.

Professors Roy and Adami, in their classical paper published in the *Practitioner*, vol. xliv, gave on page 251 a series of graphic curves showing the relation in time of the principal cardiac events. They show that the papillary muscles commence to contract only when the aortic valves open. They also show that the auricular contraction is normally maintained till the aortic valves open.

One is compelled, on reflection, to suppose that the auricle guards the auriculo-ventricular orifice during the first phase of the ventricular contraction, and its ability to do so is a consequence of the physical advantage it has over the ventricle, due to their relative sizes at the time.

In cases of severe mitral stenosis the overlap of the contraction of the hypertrophied auricle on to the contraction of the ventricle is almost certainly increased. It takes more time for the auricle to empty its contents through the narrowed mitral orifice, and the so-called presystolic murmur goes into ventricular systolic time in harmony with the prolonged auricular contraction. Often the mitral valve, as indicated by the autopsy, must have been incompetent for years, yet the history of the case shows that there was no regurgitation or systolic murmur till late in the illness, when, on account of auricular dilatation, the auricle could no longer guard the orifice and prevent regurgitation.

Such possibilities for the auricle as I have indicated are the normal consequences of the physical principles which Sir Robert Woods and I in the past, and Dr. Cranston Walker lately, have endeavoured to explain.

In my paper "Cardiac peristalsis and mitral stenosis" in the BRITISH MEDICAL JOURNAL of April 2nd, 1921, I have entered more fully into this subject.—I am, etc.,

Mentone, France, March 8th. D. W. SAMWAYS.

SIR,—I feel sure Dr. E. E. Laslett is right, and that variation in effort due to varying lengths of the contracting muscle would enter, to some extent, into the equation; but its influence would, I should think, be small, and perhaps negligible, in comparison with that of the diminished radius of curvature.—I am, etc.,

Dublin, March 13th. ROBERT H. WOODS.

HAEMATO-PORPHYRINURIA.

SIR,—In the account, published in the BRITISH MEDICAL JOURNAL of this date, of an address given by me to the Oxford Medical Society, the reporter has omitted to state that the case of congenital porphyrinuria to which I referred was shown at the meeting of the Association of Physicians in Birmingham by Dr. Leonard Mackey, by whose kindness I was enabled to show a specimen of the urine. I hope that Dr. Mackey will, before long, publish a full account of his case. May I also correct two errors in the report—namely, there are cases of porphyrinuria which are not congenital and not due to sulphonal drugs, and even among the congenital cases there are some without hydroa.—I am, etc.,

Oxford, March 11th. ARCHIBALD E. GARROD.

ASTHMA AND THE MENOPAUSE.

SIR,—The explanation given by Dr. Kark in your last issue (p. 416) as to how the case of asthma (quoted by Dr. MacBean Ross) which occurred subsequently to an artificial menopause was cured by ovarian extract is very interesting. But I am afraid that it will not hold water when a large series of cases is considered.

The interactions of the hormones of the various endocrine glands is a most difficult question, and especially so in asthma. I do not think we can compare, as Dr. Kark does, the conditions existing, as far as hormones go, in a woman who has had an artificial menopause with those in pregnant women; nor do I agree that a hyperpituitarism occurring in both is the cause of asthma. One would rather imagine that there was a shortage of pituitrin in pregnancy, if we note its common favour in the midwifery bag.

But even if we allow that there is a deficiency of the ovarian hormone in pregnancy and after an artificial menopause, and that this leads to hyperpituitarism, and this to asthma, the whole basis of the argument falls to the ground in my experience that whereas asthma commencing *de novo* in pregnancy is extremely rare, the exact opposite is quite common. Numbers of one's patients will state that the only free time they have had from asthma for years has been during the times when they have been pregnant. With one patient recently this had occurred regularly during six pregnancies; she, by the way, had a nose that was full of polypi too. Further, although dozens of patients are worse as regards their asthma or other anaphylactic symptoms just before their periods I have not noticed any difference one way or the other, for better or worse, to occur at the menopause.—I am, etc.,

London, W., March 12th. FRANK COKE.

PROTECTIVE INOCULATION AGAINST TYPHUS.

SIR,—In the BRITISH MEDICAL JOURNAL of August 13th, 1921, the experimental work done in this direction in Japan on monkeys was quoted from the *Japan Medical World*. Employing small quantities of the diluted blood of typhus patients, immunity was produced in monkeys without any preceding febrile reaction. No information upon the inoculation in men was given.

The following observation of a colleague (Dr. Muzeffer Bey) of the inoculation practised among the medical men in Baghdad during an epidemic of typhus in 1916, before the British occupation, may be interesting to others:

The blood of a case of typhus in fresh development was withdrawn, defibrinated, sterilized, and 5 c.cm. of the serum injected hypodermically at one time. Many of the doctors of the military medical service in Baghdad were inoculated, and no case of typhus occurred among those inoculated. There was no pain and no other reaction from the injection.

I should be glad to know of other experiences in this direction.—I am, etc.,

T. B. HEGGS,
Medical Officer of Health.

Baghdad, Feb. 10th.

HAEMORRHAGE IN TONSIL OPERATIONS.

SIR,—Recently there has been much correspondence in the JOURNAL concerning haemorrhage following operations upon the tonsils. To me it seems there has been too much unnecessary explanation as to the occurrence and as to the counteracting of this fault in operative technique. So far in the correspondence not a writer has, I consider, really hit the point, and I am therefore drawn into the discussion much against my wish, for I would have preferred a throat surgeon of more repute to have detailed experiences similar to mine.

I think that we must acknowledge that we owe a good deal to the American throat surgeons for improvements in operations on the tonsils. I have been following their procedures for some four years and more, and I am forced to the belief that general anaesthesia is, except in rare instances, unjustifiable in the performance of the operation of enucleation of the tonsil in the adult. This operation can be very satisfactorily performed under local anaesthesia, and it is without question in my opinion the method of choice. When considering the advisability of enucleating tonsils it is essential to inquire into the question of the coagulability of the blood. In any patient whose history suggests, even in the slightest degree, the occurrence of "bleeding," I make it a rule to do a blood time-test. Should this not be satisfactory the blood is improved in its coagulability. I find that haemostatic serum of Parke Davis is superior to any other method, and I have never yet failed to bring the patient's blood to a satisfactory state with this drug.

In all cases of tonsil operations I give, as a routine in both private and public hospital cases, 2 c.cm. of the serum three hours before the operation and a hypodermic injection of morphine q.s. at the commencement of the operation. I always perform these operations in a hospital. The essential point to aim at in injecting the solution is to bring about "block" anaesthesia. After swabbing the fauces and soft palate with 10 per cent. solution of cocaine, the needle is inserted into the anterior pillar of the fauces about 5 mm. from its border at the junction of the upper and lower two-thirds. The needle is directed upwards, outwards, and backwards for an inch and 1 to 1½ c.cm. of a 1 per cent. of cocaine or 2 per cent. novocain is injected, the tonsil being avoided by the needle as it is advanced. An injection of a few minims is made in the region of the lingual nerve about the level of the base of the tongue. A similar small injection I make into the palate immediately above the tonsil. Previously, when I used the infiltration method of anaesthetizing the tonsil region, I had frequent cases of bleeding. With this latter method of "block" anaesthesia I have had no troublesome cases whatsoever. In public hospitals I use a sharp guillotine and perform the operation by a quick method, following the procedure of Sluder. There is usually an immediate sharp haemorrhage, but this ceases in a short time. In my private work I either do the quick method or more often a slower method, using a blunt guillotine and crushing the tonsil out much after the method of La Force, and in rare cases by dissection, using a blunt guillotine as a fixation forceps and dissecting with a blunt Dan McKenzie dissector. I am convinced that there is really no necessity for any elaborate procedures in performing these operations. I have myself only once had to sew up the pillars of the fauces, and this was when I had used general anaesthesia. I have come to the conclusion that the more damage done to the tonsillar bed the more likelihood of post operative haemorrhage. It is only reasonable to believe that, with a patient under ether anaesthesia, the bleeding may be severe. Under local anaesthesia, by the slow crushing method one can almost always enucleate the tonsils with as little loss of blood as one teaspoonful for both tonsils.

I do not wish to imply that I am using any methods other than those which are already practised by many throat surgeons.—I am, etc.,

R. GRAHAM BROWN,
Honorary Surgeon-in-Charge, Ear, Nose, and Throat Department, General Hospital, Brisbane, Queensland.

December 28th, 1921.

X-RAY DEPARTMENTS.

SIR,—In the BRITISH MEDICAL JOURNAL on February 18th appeared a very interesting letter from Dr. C. H. Ross Carmichael on *x*-ray departments, interesting as containing an important suggestion, but still more interesting as indicating the growing spirit of dissatisfaction with the general practitioner's opportunities of diagnosis and treatment. This dissatisfaction is, I think, to be welcomed, for there can be little doubt that at the present time, for the general practitioner dealing with middle-class patients of small means, these opportunities are far too restricted.

However, if those who think like Dr. Carmichael will unite in pressing their views that there should be public *x*-ray departments, I do not think they need wait long for the realization of their plans; but "public" need not necessarily mean State or municipal, nor should treatment be gratis. It is also very important that nothing should be done to interfere adversely with the interests of those already engaged in *x*-ray work. Such a public *x*-ray department should and, I believe, can be run on entirely business lines, although assistance from some generous philanthropists may be necessary at first.

The Kensington Division, British Red Cross Society, as already announced, has started a clinic for physico-therapeutic treatment at 14, Prince of Wales Terrace, Kensington, in the running of which attention is given to these considerations. Whether the B.R.C.S. will ever be prepared to establish in co-operation with the medical profession such public *x*-ray departments I have no knowledge; but, if not the B.R.C.S., some other body of public-spirited citizens may be persuaded to take up the work.—I am, etc.,

London, W., March 9th. HAROLD H. SANGUINETTI.

SUN OR AIR?

SIR,—A question of great interest has been opened up by Dr. Leonard Hill by his research on "Metabolism of children undergoing open-air treatment, heliotherapy," etc. (February 25th, p. 301).

He shows that he—the laboratory worker—is clearly at variance with Sir Henry Gauvain, the clinician. Professor Hill attributes most of the beneficial effect of the treatment carried out at Lord Mayor Treloar's Homes at Alton and Hayling to the effect of the cooling power of the open air in the exposed body of the child under treatment. Sir Henry Gauvain attributes the benefit mainly to heliotherapy. Each of course recognizes the importance of other factors.

Which is the more potent agent in treatment is important from the practical point of view. The figures in Dr. Hill's article are all in favour of open air *per se* being the more active agent, and in a climate like ours it is well for us it is so. A decision on the relative merits of heliotherapy and open air *per se* in improving general "tone" may possibly be reached by an investigation which is immediately to be undertaken by the Medical Research Council. The workers are to investigate the biological action of light, and doubtless data will be obtained from clinicians, for the subject is too complex for us to rely on laboratory findings alone.

In the meantime we must go to work with the knowledge at our disposal at present, and it is this—the cooling power of the open air stimulates metabolism and cures disease. It doesn't matter a great deal whether the sun is shining or not.

The profession owes much to Dr. Hill for giving us a scientific explanation of the manifest advantage of the open-air treatment of cases of surgical tuberculosis, and it is a line of treatment which is often the only one at our disposal in those prolonged cases of suppuration we all have to care for.—I am, etc.,

Ripon, Feb. 28th. A. C. DEVEREUX.

REPEATED TREPHININGS.

SIR,—Referring to Sir Charles Ballance's request for further particulars with regard to Philip of Nassau, I think he may be interested in the following details. Solingen says (*Manuale Operatien der Chirurgie*) that Philip of Nassau, Lord of Grimhuyse, was the son of Justinus de Nassau, and grandson of William I of Orange. He was trepanned twenty-seven times, and the surgeon who operated on him was Mr. Hendrick Chadborn of Nymegen. The patient gave a certificate, dated August, 1664, saying that he was well on that date, and this certificate was given to Solingen by Amos Chadborn, a schoolmaster, and brother of the surgeon. Solingen died in 1687, so that he may have met Philip of Nassau, although he does not say so, and the name is not again mentioned.

The story seems to be authentic. The injury was a comminuted fracture of the skull, and probably required the removal of pieces of bone on many occasions, but it is unlikely that the use of the trephine was always necessary. Apart from his surgical experiences this Philip of Nassau does not seem to have had any special claim to fame, and I do not find his name recorded elsewhere. He must, how-

ever, not be confused with Philip of Nassau, who died in 1595, and who was the son of John of Nassau-Dillenburg, and nephew of William the Silent. He was cousin to the Justinus above mentioned, and cousin once removed to Solingen's Philip. He was a brilliant cavalry leader under the command of his cousin Maurice of Orange, and was killed in a skirmish with the Spaniards.—I am, etc.,

London, N.W., March 5th. H. A. CLOWES.

CLINICAL ASPECTS OF ABDOMINAL TUBERCULOSIS.

SIR,—The interesting and excellent lecture by Mr. John Morley (p. 383) opens up a wide field for discussion. The questions arising out of this lecture are, first, can we diagnose a bacterial condition clinically? secondly, are we justified in *naming* a condition without a thorough bacteriological examination? My answer to both these questions would be in the negative.

It is so much easier to "repeat the tales of yesterday" than it is to work out new ones for ourselves that we are prone to go taking what we have been taught or read as "gospel."

I have so often proved my own clinical diagnosis wrong that I am now very slow to put a name to a condition without a full investigation. The correctness of a diagnosis depends upon its completeness, and a complete diagnosis cannot be made without using all the means at our disposal.

This letter is the result of the stimuli received from reading Mr. Morley's lecture, and is in no way a criticism.—I am, etc.,

Belfast, March 11th. J. S. RENTCUL, M.B.

MEDICINE IN ASSAM.

SIR,—Dr. W. A. Murray, writing on the above subject in the JOURNAL of January 28th (p. 165), commences his letter by admitting that he "was never a tea-garden doctor." The value of his opinions may therefore be safely left to your readers. The statements made by me regarding the conditions of tea-garden practice in Assam are founded on actual personal experience—not on hearsay—and are fully corroborated by the letter of "Experienced" in the same issue of the JOURNAL in which Dr. Murray's letter appears.—I am, etc.,

Bombay, Feb. 25th. W. G. FORDE.

PREVENTION OF VENEREAL DISEASE.

SIR,—Is it not full time that the talented scribes who contribute so largely to your correspondence columns should cease quibbling over calomel cream and Condy's fluid, which have led to Babylonic confusion? What really matters—namely, the wiping out of venereal disease—has been practically lost sight of in the whirlpool of statistics which have been advanced in support of and in opposition to preventive measures. Such contradictory statistical evidence is not worthy of a moment's consideration, and should be abandoned once and for all, and replaced by united action in endeavouring to find ways and means to check the spread of a disease which is undermining the constitutions of our most vigorous youths. The question is of national importance, and its proper handling concerns chiefly the medical profession, who should investigate the subject without puritanical bias or interference from outsiders having neither knowledge nor experience of the disease. The responsibility of bringing about a healthier state of affairs rests entirely with the profession, that deals with the material side of man and his functions, and whose duty it is to publish broadcast the best-known methods of preventing disease. Although not certain in their action, they might lessen its prevalence. There is no time to spare for the tardy and probably futile operation of moral persuasion: the passion of man is too strong to be controlled even by the knowledge of the dire effects of venereal disease. The attempt to establish continence by moralizing is but a poor reed to rely on, and will in future have no better results than those produced by the admirable lessons of temperance and chastity contained in Proverbs, Deuteronomy, Leviticus, Solomon, and St. Paul, which prove that the purifying influence of Christianity has failed after a lengthy trial. It therefore behoves the profession (although with regret) to seek a more expeditious method of saving our youths, without in any way detracting from the possible good which might accrue from the well-considered advice of those whose duty it is to watch over our spiritual lives. We cannot lose sight of the fact that the natural passions of man are as difficult to change as it is to change the Ethiopian's skin or the leopard's spots. The wise course, then, is to neutralize as far as possible the evils which are caused by the consummation of such passions by the best-known methods of prevention. There is no reason why we should pin our faith to calomel cream and Condy's fluid, neither is there to warrant their disuse, whilst seeking something better, which should be in the nature of a prophylactic applicable to both sexes. So far, the nearest approach to general utility is the sheath, which, if properly made of good material, affords a safeguard to the parties. The subject of "the prevention of venereal disease" is not a savoury one, but its importance is sufficient justification for plain speaking.—I am, etc.,

T. D. HARRIES, F.R.C.S.Eng., M.R.C.P.Lond.

Aberystwyth, Feb. 23th.

*** We are compelled to hold over a long letter on this subject, received this week from Mr. E. B. Turner and Mr. Charles Gibbs.

MUCOCELE OF THE FRONTAL SINUS.

SIR,—Mr. J. Acomb's case of mucocele of the frontal sinus (March 4th, p. 344) is of considerable interest, but if I might differ with the author on two small points, I would submit—

1. That such conditions are not so rarely due to previous trauma as he seems to suggest; in fact, by some of the leading authorities, this is held to be one of the commonest causes. If the fronto-ethmoidal region be examined in a number of cases, either in the dry cut specimen or at operation, there is frequently found what may be described as an abnormal encroachment of the anterior ethmoidal cells upon the fronto-nasal duct and the floor of the frontal sinus. It is in these cases that an injury, perhaps forgotten, and possibly much less severe than that described by Mr. Acomb, may produce a definite obstruction to normal drainage, and so give rise to the morbid condition under consideration.

2. With regard to the precautions adopted for securing drainage. In my experience this is the most important part of the operation, from the point of view of ultimate results, and cannot be too thoroughly undertaken. I have found that it needs considerably more than a gauze drain (however large) left for twenty-four hours to establish permanent drainage in the newly formed duct, which is only too apt to close up with granulations and scar tissue. I now make a practice of inserting as large a piece of thick rubber tubing as is possible, and leave this *in situ* for ten days; even after this has been done I find the periodical passage of sounds is necessary until the drain has become "consolidated" and permanently efficient. Without these careful, if tedious, measures I should greatly fear a recurrence sooner or later.—I am, etc.,

Worcester, March 6th. J. B. CAVENAGH.

GERMAN-MADE X-RAY APPARATUS.

SIR,—The letter signed "A Manufacturer of British Apparatus" in your issue of February 25th (p. 331) raises a question of very great importance at the present time. The apparently casual manner in which certain people and institutions place their orders for electro-medical apparatus—often of a substantial nature—with German firms is disconcerting, when it is considered that English manufacturers are able to compete in price, quality, and time of delivery.

When the war broke out, manufacturers in this country were begged to produce certain indispensable electro-medical apparatus, which, owing to the previous attitude of the home consumer, had been imported from abroad. As might have been expected, the necessary apparatus was produced, and before long in such quantities that the medical services were never at a loss for a single article of this nature. Not a penny of subsidy in any shape or form was paid to these manufacturers, nor was the financial result of the war demand sufficient to place any of these firms in a favourable position to meet post-war depression. It is therefore much to be regretted that these same manufacturers do not now receive from British consumers that support to which the quality of their products would appear to entitle them.—I am, etc.,

London, March 6th. ANOTHER BRITISH MANUFACTURER.

PROFESSOR MOURE, the well-known oto-laryngologist of Bordeaux, has been made a Commander of the Legion of Honour.

A GOLD medal has been presented to Professor Arnold Netter on the occasion of his retirement from hospital service in Paris. He was *chef de service* at the Hôpital Trousseau for twenty-five years.

Obituary.

AUGUSTUS D. WALLER, M.D., LL.D., F.R.S.,

Director of the Physiological Laboratory of the University of London.

ON March 11th Professor Augustus D. Waller died from cerebral haemorrhage after twelve days' illness. He was born on July 12th, 1856, the only child of Dr. Augustus Volney Waller, F.R.S., whose name, in adjectival form, has become part of the terminology of physiology through his observation that nerves when separated from their cells of origin undergo degeneration; he used the method for tracing the course of nerve fibres especially in connexion with the spinal nerve roots then recently investigated experimentally by Magendie. The writer of these lines, who knew the younger Waller for some forty years, only remembers to have seen him really aroused to anger on a few occasions, and then almost invariably it was because he considered his father's work was being misrepresented or depreciated. In a brief dedication to his father's memory of his *Introduction to Human Physiology* the son summarized the elder's work in the following words: "Emigration of leucocytes, 1846; degeneration and regeneration of nerve, 1856; cilio-spinal region, 1851; vaso-constrictor action of sympathetic, 1853."

Augustus Désiré Waller was born in Paris, where at the time his father was engaged in physiological research, and received his early education at the Collège de Genève; the ease with which he spoke and wrote French had a considerable influence on his scientific career, and he usually communicated the result of his researches to French as well as to English societies. His father died in 1870, and his mother took the son to Aberdeen, where he graduated M.B., C.M. in 1878, and M.D. three years later. He studied in Edinburgh also, and soon after graduation went to University College, London, to work in the physiological laboratory under Burdon-Sanderson. In 1880, and again three years later, he received scientific grants from the British Medical Association, and in 1884 was appointed a research scholar. His first independent appointment was that of lecturer on physiology at the London School of Medicine for Women, where he met the lady who became his wife and life-long comrade and helper. Afterwards he was appointed lecturer on physiology in the medical school of St. Mary's Hospital, a post he retained until when about twenty years ago the physiological laboratory of the University of London was formed, mainly through his efforts.

Waller's name became known to physiologists chiefly through his investigations of the electric phenomena of the nervous system and of the heart. The rise of electrocardiology as a branch of medical science was largely due to his pioneer work. He at first used the mirror galvanometer, then the capillary electrometer, and finally the string galvanometer. In these researches, as in all he undertook, he showed remarkable originality in the devising of experiments and great ingenuity in the designing and construction of apparatus, which sometimes looked rough but were always efficient. He gave a general account of many years' work in the Oliver-Sharpey lectures on the electrical action of the human heart delivered before the Royal College of Physicians of London in 1913. The other work in which he was particularly engaged in his earlier days was the investigation of the electric currents in living structures, especially in nerve and muscles, but also in the skin and retina, and in plants. He published numerous papers on these subjects, and in 1903 summarized the results in a book entitled *Signs of Life from their Electrical Aspect.* The high estimation in which his work was held was shown by the fact that he was elected F.R.S. in 1892 at the relatively early age of 36.

During his investigation of the electric currents of nerve and muscle he made observations on the effects of gases and anaesthetic vapours on the irritability of these tissues; it was in this way that he became interested in practical anaesthetics. In the Croonian lecture delivered before the Royal Society in 1896 he related his observations on isolated nerves, and in the following year, when President of the Section of Anatomy and Physiology of the Annual Meeting of the British Medical Association at Montreal, he opened a discussion on the relative efficacy of ether and chloroform; in this address he insisted on the paramount necessity for careful dosage in the administration of chloroform, a subject to which he recurred in a paper in our columns in 1898. In his view the risk depended mainly on the percentage of chloroform vapour in the air, and he contrived an apparatus for controlling the proportion. He continued to occupy himself with the methods for the estimation of the quantity of chloroform in mixtures with air, and in the practical application of his own experimental observations and those of others. He was seriously disturbed by the number of deaths under chloroform, believing that the majority of them might be avoided, and on May 20th, 1901, addressed a letter to the Council of the British Medical Association urging that it should give consideration to the question of accidents during anaesthesia. It was not a new question for the Association, which had appointed a committee on chloroform in 1877, and another on anaesthetics generally in 1891. In 1901 the Council decided that the question should be attacked along a different line of approach —the experimental. The special chloroform committee appointed consisted of Dr. (now Sir James) Barr, Dr. Dudley N. Buxton, Sir Victor Horsley, and Professor Waller. The committee subsequently co-opted Mr. A. Vernon Harcourt, F.R.S., and Professor Dunstan. It was instructed to investigate methods of quantitatively determining the presence of chloroform in the air and in the living body, and to determine if possible what is the minimal dose of chloroform which will secure an adequate anaesthesia for operations and at the same time not endanger life. Professor Waller at first acted as chairman of the committee, but retired before the report of the committee was published in 1911. The volume, which was edited by Dr. Buxton, contained among the appendices to the report two papers by Professor Waller, both dealing with the quantitative estimation of chloroform; they had been published in our columns in 1902.

During the last years of his life Waller was particularly interested in two subjects—the cost of muscular work as measured by the amount of carbon dioxide exhaled, and the emotive response of man to pain or the threat of pain. Both afforded evidence that Waller's originality of mind and ingenuity in contriving experiments were in no degree diminished, and illustrated his curious power, due to the fascination of his personality, of inducing men voluntarily to submit to experiments not wholly agreeable. Some of those on the cost of muscular work were carried out in the physiological laboratory of the university on ex-soldiers he engaged to do measured work, others in London printing offices, among his willing subjects being members of the printing staff in the composing room of the BRITISH MEDICAL JOURNAL. His results were communicated to various societies and many of them were published in a series of papers published in our pages during 1920 and 1921. The other inquiry was carried out on friends he inveigled into his laboratory at the university, or into the private laboratory he had fitted up in his roomy old house in Grove End Road, St. John's Wood. It was certainly a weird experience to find that one reacted more strongly to the threat of a match than to the actual burn. The observations contain a lesson for surgeons—that the fear or apprehension of pain may be worse than its realization.

Waller's contributions to medical and physiological science were very numerous; a large part of them is to be found in our volumes, in the *Transactions* of the Royal Society, and in the *Journal of Physiology.* His *Introduction to Human Physiology,* to which reference has already been made, reached its third edition in 1896, and in the same year he published *Animal Electricity.* His academic distinctions, honorary memberships, and degrees were many. In 1889 he became a Lauréat of the Institute of France for his discovery of the electromotive action of the human heart, and its record by electrocardiogram, and in 1892 the Royal Academy of Science of the Institute of Bologna awarded him the Aldini prize. He was a corresponding member of many foreign learned societies and academies, and an honorary member of the Council of the University of Tomsk.

Professor Waller married Alice Mary, daughter of the late Mr. George Palmer, M.P. for Reading, and had three sons and a daughter. The house in St. John's Wood, scarcely less than his laboratory at South Kensington, was a centre of inspiring work and fertile ideas, for his wife shared in all his labours; her recent illness no doubt precipitated the stroke from which he died. The Physiological Laboratory of the University of London was established in an upper floor of the Imperial Institute building, and Waller was its unpaid director. It was equipped by gifts made by himself and some of his friends. The research and teaching carried out there had great influence upon physiological progress; but a year ago there was an unfortunate proposal to close the laboratory, on grounds of economy. Happily, wiser counsels prevailed,

and the Senate resolved to continue the laboratory until the end of 1923, and to increase its grant for upkeep.

He took up motoring in the early days, and was never without one or two cars, not always of the newest patterns, but capable in his experienced hands of serving his daily needs, and of doing long journeys in which he and his inseparable companion and aid Mrs. Waller found much pleasure. When he went to Paris, as he did pretty frequently, either to attend meetings or to work at the Marey Institute, of which he was free, he shipped his car from Southampton to Havre and drove the remainder of the journey. Recently when he was investigating the physiological cost of muscular work measured by the exhalation of carbon dioxide he and his assistant, Miss de Decker, a Belgian lady, obtained leave to make observations on Belgian soldiers during route marches at various paces. Here again his car came in handily. Few men got more work and more fun out of a motor car. He loved fun as much as work, and entered into both with the same zest. But he was a physiologist first and last; he thought it and talked it. He was a good talker, eager, emphatic, sometimes a little brusque and impatient with slower-witted folk. But if some flying dart wounded he was quick to make amends, a little puzzled sometimes to understand why anyone should mind a prick which he took himself as part of the fun of the game—a generous and loyal friend.

SIR THOMAS LEWIS, M.D., F.R.S., writes: May I add a few words of tribute to the memory of Professor Waller, whose death will be much regretted by both physiologists and physicians in this country and in many other lands. He was a man of unusually keen intellect, and has been for very many years a notable figure in British physiology. His brilliant powers of exposition will long render his demonstrations at the Physiological Society memorable. His early work on electro-physiology, extensive and thorough as it was, and his observations upon chloroform, are well known. Waller was the first to show that currents set up by the beating of the human heart can be recorded; he was the first to obtain a human electro-cardiogram. Considering his work in the light of its development, this has been perhaps the main, though by no means his sole, contribution to the science of experimental medicine. The discovery long preceded the introduction of the string galvanometer, and was the more remarkable in that it was accomplished in the eighties. It will remain a milestone in the history of this branch of knowledge. Although those who explored the same field could not always see eye to eye with Waller in his later views, nevertheless they fully recognized that in this field he was a pioneer, and that his early observations went far to prompt further developments along similar lines.

HENRY KINGSMILL ABBOTT, M.D.,

Medical Superintendent, Hants County Asylum.

WE regret to record the death of Dr. Henry Kingsmill Abbott, Medical Superintendent of Hants County Asylum, Fareham, on February 27th, 1922. Dr. Abbott was born at Monkstown, co. Dublin, in September, 1863, and was the eldest son of the late Rev. Thomas Kingsmill Abbott, Litt.D., D.D., Senior Fellow of Trinity College, Dublin. He entered Trinity College in 1881, and having obtained term honours in natural science and logic, he graduated B.A. in 1885. He obtained the degrees of M.B., B.Ch. in 1887, and of M.D. in 1889. He took the D.P.H., Conjoint Board, Ireland, with honours in 1898. His professional career was almost entirely devoted to asylum work. He obtained the position of Junior Assistant Medical Officer to the Hants County Asylum in 1890, and in 1906 he was appointed Medical Superintendent. Dr. Abbott was for some time Stewart Lecturer in Mental Diseases at Trinity College, Dublin, and also Examiner in Psychiatry at the university. He was a man of wide culture, but unobtrusive and retiring in disposition. He was extremely conscientious, and administered his asylum with conspicuous ability and scrupulous fairness. He bore his last illness with extreme fortitude, he scarcely ever referred to the subject even to his most intimate friends, and he carried out his work until shortly before his death. He was buried in the asylum cemetery, as he had wished, and the funeral service was attended by his brother, the Rev. Canon Abbott, B.D., and other relatives, members of the visiting committee, the staff, and a large gathering of his personal friends. His loss will be severely felt in the institution, which he had served faithfully for thirty-two years.

THE LATE PROFESSOR BENJAMIN MOORE.

SIR EDWARD SHARPEY SCHAFER, F.R.S., Professor of Physiology in the University of Edinburgh, writes: There is an error in your obituary notice of the late Professor Benjamin Moore which ought not to pass uncorrected. Dr. Moore was never a pupil of Sir William Ramsay, nor was he ever on the staff of the Chemical Laboratory at University College. Ramsay was, however, well aware of his attainments and, as he told me himself, was struck with his profound knowledge of chemistry. This knowledge Moore obtained from the late Professor Edmund Letts of Belfast, of whose teaching he always spoke with enthusiasm. Moore came from Belfast to University College to study medicine, and after obtaining his qualifications was for five years my assistant in the department of physiology there. During that time he published important work, alone and with others, on the chemistry of the suprarenal capsules, on the physiological action of certain alkaloids, on the absorption of fats, and on the innervation of the spleen; building up so fine a reputation not only in biochemistry but also in experimental physiology that he was invited to occupy the Chair of Physiology in the Medical School of Yale University. The rest of his career is correctly given. By his premature death physiology has been deprived of one of its most distinguished exponents; and British physiologists have to deplore the loss of an able fellow worker, whose loyalty and modesty of character endeared him to his many friends, and not least to myself.

WE regret to record the death of Dr. WILLIAM HOLDER, J.P., which took place at Hull, in his 74th year. He was born at Hull, where he was apprenticed to a surgeon, and received his medical training at the then Hull and East Riding School of Medicine. He obtained the diploma of M.R.C.S. and the L.S.A. in 1872, and established himself in practice in Hull. He took a great interest in sanitary reform, and was elected in 1888 to the Town Council, being elected an alderman in 1905, a position which he resigned in 1910 owing to ill health. He was chairman of the Sanitary Committee, and played a leading part in securing the removal of many of the city's worst slums; and he was an ardent advocate of cremation, inducing the Corporation to erect a municipal crematorium, the first of its kind in the country. He was also chairman of the Electricity Committee, and persuaded the Town Council to embark upon the building of a power station and the installation of electricity. For over forty years he was an active member of the British Medical Association; he was a former chairman of the East York Division, and president of the East York and North Lincolnshire Branch. For many years Dr. Holder was one of the most energetic and prominent public men of Hull, held in high regard for his strength of character and his impartial mind. He is survived by his widow, two sons, and three daughters.

DR. JAMES HURLEY died on March 5th at Newport (Mon.), where he had practised for the past thirty years. He was a native of co. Cork, studied in Queen's College, Cork, and qualified L.R.C.S. and P.Ed. in 1890. After he settled in Newport he soon attracted a large number of patients, and had one of the most extensive general practices in the district. He held the appointments of medical officer and public vaccinator under the Newport Board of Guardians and medical officer to the Shipping Federation. Dr. Hurley was a member of the British Medical Association, but did not take an active part in medical politics. He was much devoted to sport, was a great lover of horses, and on more than one occasion obtained awards at the trial for hunters in connexion with Lord Tredegar's show. A colleague writes: Hurley's death occurred with tragic suddenness. He attended as usual to his patients on Saturday, and was found dead on Sunday morning. One may reflect with the poet Horace on the uncertainty of life (Odes iv, 7):

> "Quis scit an adjiciant hodiernae crastina summae
> Tempora di superi?"

IN a note contributed to this column of March 4th, p. 372 Dr. Herbert E. Friend said that the Rev. Dr. James George "must surely have been the last of the old army surgeons who saw service in the Crimean war." A correspondent writes: A War Office *Quarterly Army List* of last year shows six retired officers of the Army Medical Department, who served in the Crimea, as alive less than a year ago. Two of these have since died, but apparently there are four still

living—Deputy Surgeon-General A. D. Gulland, Brigade Surgeons C. A. Innes and W. C. Roe, and Surgeon-Major A. E. T. Longhurst. Innes and Longhurst served in the Indian Mutiny also. Probably there are still others who, like the Rev. Dr. George, either retired early, before they had earned a pension, or who only served temporarily for the Crimean war, and whose names are therefore not included in the lists of retired (pensioned) officers. The last Crimean veteran who served in the I.M.S., Surgeon-Major Robinson Boustead, died on October 8th, 1916, over five years ago.

The Services.

ROYAL ARMY MEDICAL CORPS.

IN reply to a recent question in the House of Commons, the Secretary of State for War (Sir L. Worthington-Evans) stated that the present strength of the Royal Army Medical Corps is 1,321 officers and 4,990 other ranks. The establishment estimated as required for April 1st, 1923, is 1,045 officers and 4,516 other ranks.

Universities and Colleges.

UNIVERSITY OF OXFORD.

Appointment of Litchfield Lecturer in Surgery.—Edward Cecil Bevers, B.M., M.A., St. John's College, F.R.C.S., has been appointed Litchfield Lecturer in Surgery for two years from January 5th, 1922, in succession to A. P. Dodds-Parker, B.M., M.A., Magdalen College, F.R.C.S.

UNIVERSITY OF CAMBRIDGE.

AT a Congregation held on March 10th voting took place on a Grace proposing that mathematics should rank *pari passu* with the existing subjects in the schedule for Part I of the Natural Science Tripos. The Grace was carried by the narrow margin of 8 votes, 74 voting *placet* and 66 *non-placet*.

The following medical degrees have been conferred:

M.CH.—R. St. L. Brockman.
M.B., B.CH.—R. A. Oliphert, S. J. Cowell, W. S. Gross, E. I. Lloyd, P. R. Boswell.
M.B.—W. H. Marshall, A. J. Copeland.
B.CH.—E. Donaldson.

F. N. Sidebotham has been approved for the degree of M.D.

UNIVERSITY OF LONDON.

A MEETING of the Senate was held on February 22nd. The following were appointed Fellows of University College: Mr. C. J. Bond, C.M.G., F.R.C.S., member of the Medical Research Council, Dr. F. M. R. Walshe, O.B.E., Assistant to the Director of the Medical Unit at University College Hospital, and Colonel Sir Arthur Lisle A. Webb, K.B.E., C.B., C.M.G., Director-General of Medical Services at the Ministry of Pensions. Mr. Somerville Hastings was recognized as a teacher of oto-rhino-laryngology at Middlesex Hospital Medical School.

Part B (ii) of regulation 4 for the examination for the diploma in psychological medicine was amended by an addition of words requiring the candidates to state at the time of entry which of the alternative sections in psychological medicine he will take: (*a*) a higher knowledge of mental diseases and a less advanced knowledge of mental deficiency, or (*b*) a higher knowledge of mental deficiency and a less advanced knowledge of mental diseases.

Professor H. R. Dean has been admitted to the Faculties of Medicine and Science as from June 21st, 1922.

A graduation dinner will be held on Presentation Day, May 4th, in the Guildhall at 7.30 p.m. Applications for tickets (one guinea each, including wine), should be made to the Secretary to the Establishment Committee.

UNIVERSITY OF MANCHESTER.

Dr. E. J. SIDEBOTHAM, acting Director of the Public Health Laboratory, has been appointed a member of the Board of the Faculty of Science. The University prize in medicine has been awarded to Hilda M. Linford.

UNIVERSITY OF DUBLIN.

ON the proposal of the Board of Trinity College, the Senate of the University has decided to confer the honorary Degree of Master of Surgery upon Dr. George E. Armstrong, Professor of Surgery at McGill University, Montreal.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

An Ordinary Council was held on March 9th, when Sir Anthony Bowlby, President, was in the chair.

The Licence in Dental Surgery was granted to sixty-five candidates found qualified at the recent examination.

Revised Curriculum.—A report was received from the Committee of Management, submitting a copy of the new regulations of the Conjoint Board, setting forth a revised course of study and examination for the L.R.C.P. and M.R.C.S. diplomas, which it is proposed should be made applicable to candidates who have not passed the required preliminary examination before January, 1923. These new regulations were approved provisionally, and will be circulated to the various other examining bodies.

Election of Three Fellows to Council.

The Secretary of the College has forwarded to the Fellows the usual address informing them that a meeting of the Fellows will be held at the College on Thursday, July 6th, at 2 p.m., for the election of three Fellows into the Council in the vacancies occasioned by the retirement in rotation of Sir Charles A. Ballance, K.C.M.G., C.B., M.V.O., Sir William Thorburn, K.B.E., C.B., C.M.G., and Mr. William McAdam Eccles. Nomination forms, duly filled up, should be received by the Secretary not later than Monday, March 20th. A voting paper will be sent by post to each Fellow whose address is registered at the College, on Tuesday, April 4th next. Fellows are requested to give notice, without delay, of any change of address, so that their voting papers may not be mis-sent.

Constitution of the Council.

The composition of the Council of the College is, at present, since July, 1921, as follows:

President.—Sir Anthony A. Bowlby, K.C.B., K.C.M.G., K.C.V.O., C. (1) 1904, (2) 1912, (3) 1920; Pres. 1920.
Vice-Presidents.—Sir Charles Ballance, K.C.M.G., C.B., M.V.O., C. (1) 1910, (2) 1914; Sir D'Arcy Power, K.B.E., C. (1) 1912, (2) 1920.
Other Members of Council.—Sir Charters J. Symonds, K.B.E., C.B., C. (1) 1907, (2) 1915; Mr. W. H. Haslam, C. (1) 1903, (2) 1916; Sir J. Bland-Sutton, C. (1), 1910 (2) 1918; Sir Berkeley G. A. Moynihan, K.C.M.G., C.B., C. (1) 1912 (substitute), (2) 1919; Mr. H. J. Waring, C. (1) 1913, (2) 1921; Sir W. Thorburn, K.B.E., C.B., C.M.G., C. 1914; Mr. W. McAdam Eccles, C. 1914; Sir C. Ryall, C.B.E., C. (1) 1914 (substitute), (2) 1915; Mr. Walter G. Spencer, O.B.E., C. (1) 1915, (2) 1918; Mr. F. F. Burghard, C.B., C. (1) 1915 (substitute), (2) 1921; Sir Herbert F. Waterhouse, C. 1915: Mr. T. H. Openshaw, C.B., C.M.G., C. 1916; Mr. E. Raymond Johnson, O.B.E., C. 1915; Mr. V. Warren Low, C.B., C. (1) 1916 (substitute), (2) 1917; Mr. J. Sherren, C.B.E., C. 1917; Sir J. Lynn Thomas, K.B.E., C.B., C.M.G., C. 1918 (substitute till 1925); Mr. E. W. Hey Groves, C. 1918; Sir C. Wallace, K.C.M.G., C.B., C. 1919; Mr. F. J. Steward, C. 1920; Mr. W. Thelwall Thomas, C. 1921.

The medical schools are represented as follows:

London:	
St. Bartholomew's	4
Charing Cross	1
Guy's	3
King's College	1
London	2
Middlesex	1
St. Mary's	1
St. Thomas's	2
University College	1
Westminster	1
Special London Hospital	1
Total London	18
Provincial:	
Birmingham	1
Bristol	1
Cardiff	1
Leeds	1
Liverpool	1
Manchester	1
Total Provincial	6
Total Council	24

ROYAL FACULTY OF PHYSICIANS AND SURGEONS, GLASGOW.

THE following have been admitted, after examination, as Fellows: E. M. E. Cumming, H. K. Rowntree.

Medical News.

AT a meeting of the Royal Society of Edinburgh, on March 6th, Dr. Francis A. E. Crew, Dr. W. Osborne Greenwood, and Professor J. C. Meakins were elected Fellows.

THE Cantor Lectures before the Royal Society of Arts will be given by Mr. L. G. Radcliffe on "The Constituents of Essential Oils," on Monday evenings, March 20th and 27th, and April 3rd, at 8 p.m.

DR. ANDREW BALFOUR, C.B., C.M.G., will give a lecture at the Royal Sanitary Institute, 90, Buckingham Palace Road, S.W.1, on Wednesday, April 26th, at 5.30 p.m., on "The Outlook in Tropical Medicine."

AT the first annual meeting of the National Institute of Industrial Psychology, it was announced that a public meeting, arranged by the Institute, will be held on March 27th at the Mansion House, London. The report for 1921 was presented by the Chairman of the Executive Committee, Mr. H. J. Welch, and among the speakers was Dr. C. S. Myers, F.R.S., who has resigned the Directorship of the Psychological Laboratory at Cambridge in order to devote his whole time to the work of the Institute.

MISS KATE C. GARRICK, daughter of the late Sir James Francis Garrick, K.C., for ten years Agent-General in London for Queensland, has by her will bequeathed £10,000 to the Senate of the University of Queensland to found a James Francis Garrick professorship of either law or medicine, as may seem best to the University, in memory of her father.

THE Board of Control has, with the approval of the Minister of Health, appointed the following Committee to consider the nursing service in county and borough mental hospitals, and in what directions it can be improved: Dr. C. Hubert Bond, Commissioner of the Board of Control (chairman); Dame Louise Samuel, Mrs. How-Martyn, Mr. E. A. Medus, Dr. H. Wolseley-Lewis (Medical Superintendent, Kent County Mental Hospital, Maidstone), and Dr. G. F. Barham (Medical Superintendent, London County Mental Hospital, Claybury). The name of a matron of a mental hospital is to be added.

A POST-GRADUATE course in obstetrics will be held at the Clinic Baudelocque, Paris, from April 25th to July 13th. The subjects will include the pathology of gestation and parturition, pathology of the newborn, obstetrical operations, gynaecology, and syphilis and its relation to the functions of reproduction. The fees for the different parts of the course and further information may be obtained from the secretary of the Faculty of Medicine, Rue de l'École de Médecine, Paris.

THE thirty-fourth annual meeting of the American Pediatric Society will be held at Washington on May 1st, 2nd, and 3rd.

THE College of Ambulance can supply a motor ambulance equipped with *x*-ray apparatus and staffed by a radiographer, nurse, and bearers for use where a patient cannot be transported. It is free to the poor, and the fees charged to others can be obtained, together with all other particulars, on application to the College of Ambulance, 56, Queen Anne Street, Cavendish Square, W.1.

LOUVAIN University has received a legacy of £20,000, which is to be used for erecting a special building for cancer research.

AN epidemic of alastrim is reported to have spread all over the island of Jamaica; 2,300 cases have been reported during ten months, the epidemic having started in Kingston. Alastrim resembles a mild form of small-pox, and is thought to have originated in Brazil. Its occurrence has been reported in Cuba, Australia, and Canada during the past ten years.

THE Council of the Royal Sanitary Institute has established an examination in tropical hygiene for sanitary inspectors, the syllabus of which has been prepared to cover the special duties, including mosquito prevention, sanitation of native quarters, tropical conditions on health, tropical diseases, and has received the general approval of the Colonial Office and the London School of Tropical Medicine.

RECRUITING has been opened for the 8th (London) Sanitary Company, the establishment of which embraces a large proportion of N.C.O.s as inspectors. The course of training includes instruction in theoretical and practical sanitation, in addition to ordinary Territorial Army training, which includes fifteen days in camp annually, but the camp training may be excused. Application should be made to the O.C. 8th (London) Sanitary Company, Duke of York's Headquarters, Chelsea, S.W. 3, any Monday or Wednesday between 6 and 8 p.m.

DR. H. S. COOPER, on the occasion of leaving Yaxley, where he has practised for twenty-two years, has been presented by his friends and patients with an illuminated address, a gold-mounted umbrella, and a tortoiseshell-handle walking stick. At the same time Mrs. Cooper was given a gold and amethyst brooch.

A GENEROUS gift has enabled the authorities of the Western Infirmary, Glasgow, to nominate a member of the nursing staff to take the course of training at King's College for Women (University of London) to qualify as a sister tutor.

AT Keighley West Riding Court, on March 4th, an ironworker was summoned by Dr. J. C. Wilson, of Haworth, for assault. Dr. Wilson had attended the man's child, who died of diphtheria, and a week or two later Dr. Wilson was stopped in the street by the man, who used abusive epithets to him and assaulted him. The defendant, in court, withdrew the allegations of negligence, and was bound over to be of good behaviour for twelve months. The chairman said that the magistrates thought Dr. Wilson had acted very generously in the matter.

AT their last meeting the governors of the Royal Bucks Hospital, Aylesbury, accepted with regret the resignation of Dr. Horace Rose from the position of surgeon-in-ordinary. Dr. J. Steele of Aylesbury was elected in his place, and Dr. Rose, in view of his length of service, was elected honorary consulting surgeon.

THE number of deaths from influenza in the week ending March 11th in the 105 great towns was 201, against 306, 525, and 670 in the preceding three weeks; in London the figures were 30, against 49 in the week ending March 4th. Thus the number of fatal cases from the disease continues to decline.

Letters, Notes, and Answers.

As, owing to printing difficulties, the JOURNAL *must be sent to press earlier than hitherto, it is essential that communications intended for the current issue should be received by the first post on Tuesday, and lengthy documents on Monday.*

ORIGINAL ARTICLES and LETTERS *forwarded for publication are understood to be offered to the* BRITISH MEDICAL JOURNAL *alone unless the contrary be stated.*

CORRESPONDENTS who wish notice to be taken of their communications should authenticate them with their names—of course not necessarily for publication.

AUTHORS desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 429, Strand, W.C.2, on receipt of proof.

IN order to avoid delay, it is particularly requested that ALL letters on the editorial business of the JOURNAL be addressed to the Editor at the Office of the JOURNAL.

THE postal address of the BRITISH MEDICAL ASSOCIATION and BRITISH MEDICAL JOURNAL is 429, Strand, London, W.C.2. The telegraphic addresses are:

1. EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology, Westrand, London*; telephone, 2630, Gerrard.
2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate, Westrand, London*; telephone, 2630, Gerrard.
3. MEDICAL SECRETARY, *Medisecra, Westrand, London*; telephone, 2630, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Bacillus, Dublin*; telephone, 4737, Dublin), and of the Scottish Office, 6, Rutland Square, Edinburgh (telegrams: *Associate, Edinburgh*; telephone, 4361, Central).

QUERIES AND ANSWERS.

DIET AND GALL STONES.

DR. F. D. SPENCER (Wolverhampton) asks whether anything is known of a special diet for a patient who is constantly making gall stones. The suggestion is that as all gall stones are composed of cholesterin it should be possible to eliminate from the diet food that is likely to produce cholesterin.

TREATMENT OF TREMOR.

"W. G. W." desires suggestions as to any medicinal or other means for the alleviation of tremor of the right hand and foot in a lady, aged 77, who has been subject to the condition for some six or seven years. It is thought to be due to very slowly advancing paralysis agitans. There is no tremor elsewhere, nor other signs of the condition, and beyond some senile degeneration of the myocardium she is in good health and unduly active for her age.

CATHETER LUBRICANTS.

"X. Y. Z." would be much obliged if any member would inform him of the proper and safe strength of a cocaine lubricant or ointment (or allied preparation) to be used to smear on a catheter or bougie which has to be retained in the bladder for hours and causes great irritability. The case is one of stricture—where immediate dilatation or operation is not advised.

MEDICAL BOOK-KEEPING.

"SEEKER" writes to inquire if any medical practitioner who has evolved a complete but labour-saving system of keeping accounts and medical records of private work in general practice would describe it. He states that in looking for a practice he has seen many varieties of system, or lack of system, from the most meagre to an elaborate card-index system which apparently required far too much time and attention; moreover, the latter did not yield quickly a record of the work and income for a short period.

TREATMENT OF BROKEN CHILBLAINS.

DR. G. H. WAUGH (Rugby) writes: In answer to "J. B." (p. 420), the best treatment is sterilized gauze soaked in a mixture of equal parts of liq. plumbi sub. fort. and glycerin, changing the dressing as often as necessary on account of the discharge from the raw surfaces.

INCOME TAX.

"COUNTRY PHYSICIAN" lodged a claim to repayment of income tax with the local inspector of taxes. Later he was informed that a fire had occurred in the office in which the claim and documents had been destroyed, and more recently has been told that the duplicate claim which was then sent in had not been received.

*** We suggest that our correspondent should request the inspector to obtain if possible special authority from the Board of Inland Revenue to repay the amount due without a formal claim, but after production by the solicitors who dealt with the claim of their record of the particulars. It might possibly save some further delay if the request was made direct through the Head Office of the Inland Revenue in Dublin. We have not heard of a similar case, but seeing that two claims have been destroyed or lost in transit we think that in the special circumstances repayment might be made without further expenditure of time and labour on preparing formal statements and vouchers.

"P. R." bought a 14.3-h.p. Austin car in 1915, sold it for £400 in 1921, and bought a 15.9-h.p. Wolseley for £930. What can he claim as an expense for income-tax purposes?

*** The amount that can be claimed is the cost of replacement—that is, the expenditure incurred in obtaining a car of similar grade and power. Suppose, for instance, that a reasonable estimate of the cost of a 14.3-h.p. Austin car of 1921 (if there had been such a car) is £700, then the amount to be claimed is £700−£400=£300. The crux of the whole question is the fixing of the estimate for which £700 has been taken in the illustration above.

"FOREIGN" is living and domiciled in Egypt but has an income of £10 from shares in the United Kingdom, which is taxed by deduction at 6s. in the £.

*** He is entitled to such repayment as will result in his receiving a proportion of the normal income tax allowances, that proportion being determined by the ratio of his taxed income to the whole of his income whether liable to tax or not. Claims should be addressed to the Chief Inspector of Taxes (Claims), Cecil Chambers, Strand, London, W.C.2.

LETTERS, NOTES, ETC.

INTESTINAL DISINFECTION IN ENTERIC FEVER.

PROFESSOR JOHN EYRE, M.D., writes from the Bacteriological Department, Guy's Hospital: I am interested in a memorandum by Dr. Francis in the JOURNAL of March 11th (p. 388), regarding "dimol" in enteric fever, as for some time past I have been observing the results following the administration of this preparation upon the streptococcus found in the faeces (on the whole very satisfactory results have been obtained); but I have noted that in cases where pancreatic secretion was deficient the *coated* tabloids were not dissolved and were passed intact per rectum. The inference to be drawn from the last sentence of Dr. Francis's letter is that coated tabloids were used. Assuming that the intestinal haemorrhage was *propter* and not merely *post hoc*, is not the effect probably a purely mechanical one—congested areas (for example, Peyer's patches) being actually injured by the passage of the unaltered tabloids? Whereas the administration of 1/2-grain doses, which would involve the cutting in half of a tabloid and so enable solution to take place, was without effect.

DR. RONALD E. FRENCH (Burgh Heath, Surrey) writes: In your issue of March 11th, p. 388, Dr. T. E. Francis suggests that dimol may not be as free from irritation as the advertisement states; he got intestinal haemorrhage in two out of five cases of enteric within forty-eight hours of starting the administration of the drug, and found that the haemorrhage quickly ceased on discontinuing it. I have had a large experience in giving dimol to a considerable variety of cases, including one of enteric and one of acute streptococcal colitis with haemorrhagic stools, with, so far, no indication of its causing discomfort or irritation of the intestinal mucous membrane. I have always used the sugar-coated pulverette A or the syrup of dimol. It would be interesting to know if Dr. Francis used the keratin-coated pulverette B. If he did, I would suggest that the haemorrhage in his cases was much more likely to be caused by injury from the passage of the partially dissolved husk of the pulverette than by irritation from the dimol.

DR. DAVID WALSH (London, W.1) writes: The communication of Dr. Francis describing five cases of enteric fever treated by a new antiseptic is of interest. Among other things it probably indicates the ideal method of the future in attacking that curiously localized infection *in situ*. Dr. Francis's report, however, appears to me inconclusive as a clinical experiment, inasmuch as (1) it deals with too small a number of cases; (2) the selected cases are those of relapse after crisis, where one might reasonably expect haemorrhage; (3) details of the haemorrhage are not given. A sounder clinical experiment, I venture to suggest, would be to treat a large number of cases with the given antiseptic from the outset of the disease and to compare results with control cases under ordinary treatment. In that way it is possible that clinical conclusions of great value might be arrived at.

"THE DROPPED SHOULDER SIGN."

"S. M. I." writes: At a recent school medical inspection a boy of 8 years was brought before me by the teacher on account of "dropping" of one shoulder of one or two months' duration. The attitude was evident at once, and a request to walk up and down showed a well-marked "drop" of one shoulder with inversion of the arm and hand (the latter held close to the body), somewhat suggestive of Erb's paralysis. The boy looked healthy, although of the lowest class socially, and I requested that he be stripped for closer examination. Removal of the jersey at once revealed the cause of the abnormality; the nether garment had for its only support a single brace-strap over one shoulder, fixed at either end with a safety-pin. One limb of the garment was left to look after itself, and the peculiar, and at first sight morbid, attitude and gait had been adopted owing to a feeling of insecurity. The sartorial outfit comprised jersey, pants, cotton shirt, and socks (this in February), and not a button amongst them.

RESUSCITATION AFTER APPARENT DEATH.

DR. P. VERNON DODD (Hythe) writes: The interesting article by Dr. Armstrong in the BRITISH MEDICAL JOURNAL of January 28th, 1922, p. 141, with notes on the heart beating under stimulation for some time after (apparent) death reminds me of a somewhat similar occurrence in the heart of a fish after death. I was sea-fishing in an open boat on a rough winter day, with a freezing east wind blowing and sleet falling. I caught a good-sized whiting which had swallowed the hook. As there was some difficulty in extracting it I cut the fish open, and on wrenching out the hook the heart was forced out with it and fell on the snow on the seat in front of me; although it was separated from the body I watched the detached heart beat regularly for twenty minutes. I suppose the exciting cause was the stimulation of the cardiac ganglia by the cold wind. In the case of the woman referred to by Dr. Armstrong could not the heart, which is stimulated into action and kept going by the blood during life, have been stimulated into action and kept going after death by the direct action of the drugs (which in this case were injected into the left ventricle) stimulating the cardiac ganglia? It is quite possible that lives may be saved, in healthy persons who have collapsed and become apparently dead after an anaesthetic, by the immediate and systematic injection of adrenaline or some other drug into the left ventricle even before resorting to artificial respiration.

UNUSUAL FECUNDITY.

DR. J. R. WATSON (Hamilton, Lanarkshire) writes: This week I attended a twin birth in the case of a Mrs. A., whose present age is 34. She was married sixteen years ago, and in that time has given birth to 19 children. The sequence of the births is as follows: four single male children; twins, both male; twins, both female; triplets, two male and one female; three single female children; one single male; twins, both male; and lastly, twins, both male—a wonderful record for a woman of 34. All the multiple births were premature. Only four remain alive, one boy and three girls, all four being particularly fine children. There is a history of twin births in both the father's and the mother's family.

FREE INSURANCE.

AN ingenious skit, entitled "Our Free Insurance Scheme," appears in the March number of the *St. Bartholomew's Hospital Journal*. "Doctors," it begins, "are liable to suffer from many complaints; we cannot insure against all of them. We have thought it out carefully, and have picked out the following diseases, which can be insured against in *no other journal*. All ages do not suffer from the same complaints, and we therefore divide our readers into three classes: (1) The very young (aged 1 to 12); (2) the middle-aged (aged 13 to 50); (3) the very old (aged 51 to infinity). *Class 1.*—The very young will receive £5 on dying from, and 5s. a week (up to three weeks) if suffering from, any (or all) of the following: Angina pectoris, carcinoma of the prostate, hydatidiform mole, Parkinson's disease, alcoholic neuritis, and pseudocyesis. *Class 2.*—The middle-aged will receive £2 on dying from, and 2s. a week (up to two weeks) if suffering from, any of the following; Amyotonia congenita, psammoma of the left kidney, Rocky Mountain fever, Recklinghausen's disease, fracture of the bundle of Vicq d'Azyr, and weaver's bottom. *Class 3.*—The very old receive 2s. 6d. on dying from, and 3d. weekly (up to a maximum of one week) if suffering from, any of the following: Teething convulsions, anencephaly, congenital stenosis of the pylorus, von Jaksch's anaemia, intussusception, and para-mumps. It will be seen that these diseases have been chosen with two ends in view: (1) The diseases must look very well on paper. (2) There must be no chance of this journal's having to pay out any money (which would be a most wasteful proceeding)." We commend the idea to our contemporaries.

VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 28, 29, 32, 33, and 34 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 30 and 31.

THE following appointments of certifying factory surgeons are vacant: Friockheim (Forfar), Huntingdon (Huntingdon).

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